UNIFYING BEHAVIORAL INQUIRY: INTEGRATING PERSONALITY TRAITS AND SITUATIONAL EFFECTS IN THE STUDY OF POLITICAL BEHAVIOR

BY

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Abstract

We have developed a remarkable understanding of how the political environment influences individual political thought and action, but we have not made as much progress in developing our knowledge of the individual predispositions that citizens bring with them into the political world. In recent years, a novel research agenda has highlighted the role biological factors play in shaping political behavior. At the same time, there has been a resurgence of interest in personality traits in political behavior research, made possible by the rise of the Big Five in trait psychology. Though these streams (traditional environmental research, biology and politics, and personality and political behavior) have generally been viewed separately, the crucial next step for political behavior researchers will be to think about how they all fit together. In this dissertation I develop a framework for placing personality effects into a broader context. I argue that personality traits are stable, biologically-based dispositions and I demonstrate empirically that a substantial amount of the variance shared between traits and political behavior is heritable. These findings comport well with a theory of influence in which personality traits act as a mediator between genes and politics.

Moving forward from this insight, we can use personality dispositions to form a better understanding of heterogeneous environmental effects. Personality traits interact with environmental stimuli to shape political behavior. People experience the political world differently and the richest and most satisfying theories going forward will account for these individual differences without losing sight of the crucial role played by the environment. Here, I show that personality traits play an important role in shaping political discussion behavior, but that role is subtle and conditional. I also find that personality traits play an important role in influencing individual decision making, but that the environment activates considerations that

differ based on the personality characteristics of the individual. Taken together, the theoretical and empirical advances outlined here demonstrate the importance of devising models of human behavior that take individual differences seriously without forgetting about the important role played by the environment. By integrating the biological, with the environmental, the immediate with the long-term, and the political with the general psychological, we can forge a much stronger understanding of how humans behave in the political world.

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Chapter One: Unifying Behavioral Inquiry[1]

If we were asked to explain the differences between our friends and relatives we would quickly move past objective features such as age and gender and explain variation using references to basic dispositions which summarize regularities in their behavior. We might note that Brian is curious and argumentative while Emily is introspective and moody. Recognizing these distinctions in people's personalities help us to understand our own social world. We can use this information to predict how our friends will behave in different situations. We would be fairly certain that Emily would not enjoy going to a party full of people she does not know, just as we would be confident that Brian would like it and would probably get into a heated debate with someone he met. These predictions are made intuitively but research in psychology has provided empirical support for a personality approach. Given the broad applicability of personality traits for all kinds of behavior it only makes sense to imagine that traits will influence how people interact in the political domain as well.

Despite the enormous intuitive appeal, and the long history of empirical findings linking personality to social behavior, there has been surprisingly little attention paid to personality in political science research. Some of this can be attributed to theory and measurement challenges that personality research in psychology has only recently overcome. Political scientists cannot be expected to integrate a concept like personality if psychologists cannot agree on what it is or how to measure it. Even more than these practical challenges, the reason personality has not taken hold in political behavior research is because the idea of personality as an explanation does not fit with what political behavior scholars have traditionally seen as important. When thinking about individual political behavior, scholars have been most interested in studying how the

[1] Material from this chapter appears in Mondak, Jeffery J., Matthew V. Hibbing, Damarys Canache, Mitchell A. Seligson, and Mary R. Anderson. 2010. "Personality and Civic Engagement: An Integrative Framework for the Study of Trait Effects on Political Behavior." *American Political Science Review* 104: 85-110.

political environment affects citizens. This line of inquiry has sought to understand how effective various political stimuli (e.g. social networks, political advertising, election laws) are at changing how citizens think about politics or how they behave politically.

The major limitation of this environmental approach is that it often implicitly treats all people as identical until they are differentiated by the political stimuli they encounter. Work that has taken individual differences between citizens seriously has generally been focused on either demographic characteristics or political dispositions such as ideology, interest, or partisanship. The limitation of this kind of thinking is that demographics often provide little understanding of the mechanisms in play, and political dispositions are often difficult to disentangle from the dependent variables we are trying to explain. It also leaves us with a very limited understanding of the root causes of our political dispositions. Why are some people interested in politics and others not? Education certainly correlates with political interest, but many highly educated people have no interest in the political world, and many uneducated people are extremely engaged politically. Ideology and partisanship are also related to political interest, but it is entirely unclear whether interest causes ideology or the reverse.

For many years, the prevailing view of the root causes of political attitudes and behavior was that parental socialization played the most important role (e.g. Campbell et al. 1960; Jennings and Niemi 1968). Parents were thought to be the most important players in shaping political citizens. This view has recently been challenged by work suggesting that parents may still be the most important, but not because of the way they socialize children. New research has sought to demonstrate that our political behavior is, to a substantial degree, shaped by our biology. This new work has been quite successful in demonstrating that biology plays a role, but it has not yet provided a clear idea of how biology influences politics. Genes are unlikely to

influence political behavior directly. There is not a "liberal gene" or a "voting gene." Political attitudes and choices are too complex to be the result of any one, or even a handful, of genes. Many genes are likely to be involved, and biological influence is exerted indirectly. An individual probably does not have a biological predisposition to vote, or attend a political rally. Instead, a biological predisposition towards pro-social behavior could interact with contextual factors to lead certain people to be more politically engaged. In other words, biology is likely to exert an influence on general social dispositions, cognitive biases, and personality traits, which in turn influence political thinking and action (see Smith et al. 2011).

The challenge presented by this research is to understand how the pieces of the puzzle fit together. We know that the environment shapes political behavior to a substantial degree, but there is good reason to think that not everyone is affected in similar ways. We know that demographics and political dispositions are important, but we do not have a strong basis for understanding the mechanisms at work or where political dispositions come from. Finally, we now know that political behavior is largely rooted in biology, but we do not yet understand through what mechanisms biology shapes politics.

Coming full circle, a personality approach can help us to address all of these problems. Personality traits are largely rooted in biology and they provide a logical intermediary mechanism between genes and politics. In addition, personality traits are formed early in life and are quite stable over time, helping us to overcome concerns about the direction of causality. Finally, personality traits can be incorporated into theories of political behavior that focus on the interaction between basic individual dispositions and the political environment that we already know is important. Over the course of this chapter, I will expand on each of these points in turn and build a case for the three empirical chapters that follow. Incorporating personality into our

models of political behavior will not cure all ills, but it will provide an important step towards a more complete understanding of the factors that influence the attitudes and actions of citizens.

The Political Environment

At the most immediately environmental level, scholars have explained political behavior with reference to the political context of the moment. How the media covers a particular event can influence political attitudes surrounding that issue (e.g. Chong and Druckman 2007a; Iyengar and Kinder 1987; Nelson, Clawson, and Oxley 1997 among a host of examples, see Chong and Druckman 2007b for a review). Scholars have expended considerable energy seeking to identify framing and priming effects on political behavior, even as they worry that the effects identified will be short-lived or counter argued outside of the laboratory setting (Druckman and Nelson 2003; Sniderman and Theriault 2004).

A different strand of research is focused on the effects that negative campaign tone has on citizens (e.g. Ansolabehere and Iyengar 1995; Brooks and Geer 2007; Geer 2006; Mutz and Reeves 2005). Both literatures seek to understand how citizens respond to politically relevant stimuli obtained through the mass media. However, despite their similar concepts and methods, they have remained distinct literatures that rarely speak to one another. Part of the reason for this is likely because, unlike the framing literature, which has focused on attitude change as a result of differential exposure to frames, the negative advertising literature has centered on what kind of ads provide the most information (e.g. Geer 2006) and whether negative ads demobilize the electorate (e.g. Ansolabehere and Iyengar 1995, Geer 2006).

Stepping back slightly from the immediate effects of the media on political behavior, scholars have also considered the potential influence of citizens' social environments. Building

on the foundation constructed by the Columbia researchers (Berelson, Lazarsfeld and McPhree 1954; Katz and Lazarsfeld 1955; Lazarsfeld, Berelson and Gaudet 1948), more recent research has called attention to the political significance of social interaction. For example, Huckfeldt and Sprague (1987) concluded that individuals have preferences and construct their discussion networks to reflect these preferences but that the individual's ability to construct a likeminded network is constrained by the distribution of preferences in his or her social context. This insight has been followed by a growing literature which finds that the characteristics of political discussion are mediated by the particular context, including: neighborhoods (Huckfeldt and Sprague 1995), places of worship (Wald, Owen, and Hill 1988, 1990), and the workplace (Mutz and Mondak 2006). Features of the national political context also can influence the nature of political discussion (e.g. Anderson and Paskeviciute 2005; Mondak and Gearing 2003).

Institutional factors also can shape political behavior. Registration laws are hypothesized to decrease voter turnout by increasing the costs associated with voting (e.g. Nagler 1991; Rosenstone and Wolfinger 1978), with earlier closing dates for registration further lowering turnout (Patterson and Caldeira 1983). A host of other short-term institutional factors, such as party competition (Caldeira, Patterson, and Markko 1985), closeness of an election (Cox and Munger 1989) and get-out-the-vote campaigns (Gerber and Green 2000; Gerber, Green, and Larimer 2008) have been shown to play a role in shaping political participation. This review only scratches the surface of the sizable body of research which examines the way institutions influence individual citizens.

Individual Political Characteristics

Clearly, work in political science over the last 60 years has done an impressive job of exploring the potential environmental influences on political behavior. From transitory effects of media tone to the institutional constraints operating in elections, we know a great deal about how citizens' environments shape their political judgments and behaviors. Political behavior scholars have also actively investigated the role of the citizens themselves, although even research focused on the individual has tended to approach individual variation as the product of variation in the politically relevant environment. For example, there is a venerable literature which seeks to understand political participation through the lens of individual demographic characteristics, with a particular focus on socioeconomic status variables like income and education (e.g. Leighley and Nagler 1992; Verba and Nie 1972; Verba, Schlozman, and Brady 1995; Wolfinger and Rosenstone 1980). This work has been tremendously valuable in illustrating the factors that help to enable or inhibit political activity. However, demographic factors seem unlikely candidates for a causal role in political behavior, at least when used as one-size-fits-all explanations. Education helps provide citizens with the necessary resources to participate (Brady, Verba, and Schlozman 1995), and greater income means a greater stake in political debates, but that by itself does not tell us much about the mechanisms or motivations which drive political behavior. For example, education is known to be positively associated with voter turnout, but why is this so? Jackson (1995) examined several possible explanations (e.g. education instills a sense of civic duty; education increases political efficacy) and concluded that all of them played some part, but that educations greatest influence came from increasing political awareness and the likelihood of registering to vote. More recently, Tenn (2007) tried to isolate the unique effect of education when accounting for unobserved, correlated factors. Tenn

found that that an additional year of education had little marginal effect. Education then is playing a part in a larger causal story, and it is a part that is more nuanced than it would initially appear. It is also important to remember that variables like education and income are themselves products of complex causal stories involving both biological and environmental factors.

Other scholars have constructed explanations of political attitudes and behavior using political variables such as strength of partisanship (Campbell et al. 1960), trust (Hetherington 1999), and knowledge and sophistication (Delli Carpini and Keeter 1996; Galston 2001; Zaller 1992). These political factors are undoubtedly important, but they present a challenge in terms of the causal logic. For example, partisan attachment and political knowledge may lead a person to participate more, but through participation could then lead to greater levels of knowledge and stronger partisan attachment. Again, the theoretical focus tells us a great deal about the various factors at play in political behavior, but they do not tell us much about the root causes of those behaviors.

In the past, when political scientists have investigated the origins of attitudes and behaviors they have placed a special emphasis on family socialization. This is in keeping with the general focus on environmental explanations discussed above. Research on socialization is different from much of the work described earlier in that it seeks to understand the long-term influences that shape citizens before they encounter political stimuli as adults. This work has noted high concordance on political views between parents and offspring and has attributed this concordance to family socialization and social learning (e.g. Campbell et al. 1960; Jennings 1984; Jennings and Niemi, 1968; Jennings, Stoker, and Bowers 2009; Niemi and Jennings 1991; Tedin 1974, 1980). However, a recent surge of research investigating the genetic basis of political attitudes and behavior (e.g. Alford, Funk, and Hibbing 2005; Fowler, Baker, and Dawes

2008; Hatemi et al. 2009a, 2009b, 2010) casts doubt on the assumption that high parent-child concordance is evidence of socialization. These studies find that a significant portion of the variance (typically 40%-60%) in political attitudes and behavior can be attributed to genetic factors. None of this means that socialization does not play an important role, or that our discipline's focus on environmental factors is in any way incorrect. It does mean that we must expand our explanations to account for the sizable contribution biology plans in influencing politics.

One limitation of the early genetics and politics research is that, while it has shown that genes play a role in politics, it has been less successful at establishing how they do so. As skeptics are quick to point out, it is silly to imagine that there is a gene "for" voting, or a gene "for" party identification. Such a conception fails to comport with what we know about biology and what we know about politics. The real pathways of genetic influence are likely to be complex, with multiple intermediary stages (see Smith et al. 2011 for a stylized illustration). Genes influence the coding of proteins, which form biological structures, which condition neurological responses to external stimuli, which manifest in deep-seated preferences for social life, which shape human interaction in a variety of contexts, including politics. A full understanding of political behavior will require research at all of these stages, but political scientists would seem best suited to work closer to the end of the chain, where deep-seated preferences for social life meet the political context.

We have developed a remarkable understanding of how the political environment influences individual political thought and action, but we have not made as much progress in developing our knowledge of the individual predispositions that citizens bring with them into the political world. Future research should seek to address this asymmetry, but not by crafting a host

of studies focused only on individual predispositions. Instead we should attempt to identify biologically rooted predispositions and consider how they interact with the political environment to affect politics. We must acknowledge that citizens do not make political decisions in a vacuum, relying only on their predispositions. At the same time, we must keep in mind that people are not political blank slates, homogenous until the environment breathes variety into them. The newest generation of political behavior research should incorporate predispositions and environmental factors together and should be sensitive to interactions between the two.

But how can we account for predispositions? Undoubtedly, our answer to this question will evolve as we learn more, but here I focus on one particular class of predispositions that have already demonstrated their utility: personality traits. Personality traits provide us an excellent tool for studying political behavior because they have already been well established as biologically rooted predispositions that are relevant to politics. Political scientists have long recognized the potential utility of studying personality, but only within the last few years have theoretical and methodological developments allowed personality to play a more central role in the study of political behavior.

Early Work on Personality and Politics

In the past, when political scientists sought to incorporate personality into their research it was with a somewhat narrow focus. Much of this work focused on political elites, particularly presidents (Barber 1992; George and George 1964; Greenstein 2003; Renshon 1995). These studies used detailed analyses of the words and deeds of presidents in order to assess the personality and character of that individual. Although this type of research contributes

valuable insights, it is difficult to generalize the findings. Indeed, only Barber made a concerted effort to create a typology that could be applied to multiple presidents.

The sort of in-depth analysis used to study elites would be impractical in research on mass politics, and, as a result, for many years there were only a handful of studies that attempted to understand the connection between personality and citizen behavior. These studies were important but somewhat limited in their scope (but see Mussen and Wyszynski 1952 for a more general exception). Adorno et al. (1950) focused on the idea of an authoritarian personality and its significance for political outcomes, and work on authoritarianism has continued in various forms up to the present day (e.g. Altemeyer 1996; Feldman 2003; Feldman and Stenner 1997; Hethington and Weiler 2009; Stenner 2005). McClosky (1958, 1964) tried to understand the influence of personality on political ideology, and Sniderman (1975) used McClosky's data to attempt to understand the role of self-esteem in mass politics. Until the last few years, there had been a precipitous decline in political science research that attempted to apply concepts of personality to citizen behavior. The most notable exception was the literature on political tolerance (Marcus, Sullivan, Theiss-Morse, and Wood 1995; Sullivan, Piereson and Marcus 1982).

The great concern with research on the role of personality in mass politics was that we would be unable to study the topic systematically (Greenstein 1992). One reason for this concern was that, until recently, there had been little use of comprehensive models of personality in the study of political behavior. The practice in the past had been to borrow ideas and concepts from the psychology literature as it suited the author's immediate research agenda. This kind of approach is problematic for two reasons. First, it is difficult to accumulate knowledge when every scholar conceptualizes personality differently. Second, if scholars are picking and

choosing which traits to use, the temptation would be to select traits closest in content to the dependent variable (Sniderman 1975). While this approach can sometimes lead to interesting findings, it does not lend itself to the development of a unified literature on personality and its effects on politics. If we are to ever have such a literature, we need to attempt to measure multiple traits that cover different elements of personality and we needed different research teams to focus on the same basic traits so that findings can be compared (Winter 2003).

The Big Five

The failure to incorporate comprehensive models of personality into political science was not entirely the fault of political scientists. You cannot squeeze blood from a stone, and you cannot incorporate comprehensive models into your research if such models do not exist. Within the field of psychology, there was fitful progress in the study of personality through the 1960's and 1970's (Digman 1990). One of the major reasons for this lull in productive research was that there are countless possible attributes that could be incorporated into a model of personality and each scholar used somewhat different concepts and scales (John and Srivastava 1999). The other major issue confronting personality research was the critique that individuals demonstrated little trans-situational consistency in their behavior. Walter Mischel (1968) argued this position forcefully, and the debate between proponents of trait research and Mischel and his supporters set back research trait research for many years (Mondak 2010).

The Big Five framework has its roots in early work that sought to identify the core factors of individual difference, but parsimonious models of personality traits were slow to develop. One can imagine numerous characteristics that could be considered core personality traits. Indeed, Allport and Odbert (1936) identified almost 18,000 potential trait terms by examining an

unabridged dictionary. Recognizing that within this massive number of terms were a smaller number of core traits, Raymond Cattell used factor analysis to narrow Allport and Odbert's list down to models that contained between twelve and sixteen factors (Cattell 1943, 1947, 1956). The number of factors was further narrowed by Tupes and Christal (Tupes 1957; Tupes and Christal 1958, 1961) in their work for the Air Force. Tupes and Christal reported five-factor models that closely resembled the Big Five in their work on identifying the correlates of effective Air Force officers.

After the Mischel debate calmed in the 1980s and 1990s, trait psychologists began to develop comprehensive frameworks of personality based on a limited number of dimensions. It took years of accumulated research for the field of psychology to coalesce broadly around the conclusion that personality can be generally understood to exist along five dimensions: *openness to experience*, *conscientiousness*, *extraversion*, *agreeableness*, and *emotional stability* (there are a number of works which review this history including Digman 1990; John, Naumann, and Soto 2008, and Mondak 2010). Taken together, these five dimensions have come to be known as either the Big Five, or the Five-Factor model. The Five Factor model (Costa and McCrae 1992; McCrae 1989; McCrae and Costa 1996; McCrae and Costa 2003) is based on respondents' reports of behaviors. On the other hand, the Big Five (Goldberg 1993; Goldbeg 1992; Goldberg 1990; Saucier and Goldberg 2002; Saucier and Goldberg 1996) follows a lexical approach that uses everyday language (generally adjectives) to distinguish differences along the five dimensions. There is growing agreement within psychology generally that the differences between the Big Five and the Five-Factor model are relatively insignificant (Digman 1996), and for the purposes of political science research they are virtually interchangeable. Both models focus on the same five traits, and the empirical relationships identified are robust across the

different measurement approaches. Most of my data follows Goldberg's lexical approach, but I make use of both types of measures across the different datasets in this dissertation. The five dimensions that make up the Big Five taxonomy have been the subject of a great deal of empirical scrutiny, and many new studies on the correlates of the Big Five are reported each year. In brief, the essential features of the Big Five are as follows.

Openness to Experience. The newest member of the Big Five, openness to experience has also been called "intellect." This trait is associated with curiosity, open-mindedness, learning, and a willingness to consider new ideas (McCrae and Costa 1985). Empirical research has linked openness to experience to risky behavior (Booth-Kewley and Vickers 1994), self-efficacy (Mak and Tran 2001), and information seeking (Heinstrom 2003). *Conscientiousness*. This trait is thought to be related to a sense of personal responsibility and reliability. Individuals scoring high in conscientiousness are thought to be organized, dependable and hard-working, which leads to success in the workplace (Barrick and Mount 1991; Tett et al. 1991) and greater academic achievement (Wagerman and Funder 2007). Conscientiousness has also been associated with risk-avoidance (Arthur and Graziano 1996; Kowert and Hermann 1997). *Extraversion*. The most widely studied Big Five dimension, extraversion relates to how individuals interact with their environment. Those scoring low in extraversion tend to be passive, shy and reflective, while extraverts are more active and social. Extraversion has been linked to greater self-confidence (Pulford and Sohal 2006) and risk-taking (Markey et al. 2006; Malouff et al. 2006). *Agreeableness*. This trait deals with how individuals interact with others and handle conflictive situations. People with high scores for agreeableness tend to work well with others (Barrick and Mount 1991), avoid conflicts (Jensen-Campbell and Graziano 2000) and avoid risky behaviors (Markey et al. 2006). *Emotional Stability*. Also sometimes known as

neuroticism, emotional stability has well-studied over the years. The trait deals with anxiety, and emotional control. Low levels of emotional stability are associated with feelings of stress, and depression (Matthews and Deary 1998). High levels of emotional stability are also associated with risky behavior (Nicholson 2005) and feelings of self-efficacy (Thoms, Moore, and Scott 1996).

The Big Five presents us with an opportunity to conduct new research in political science which incorporates personality. The parsimonious nature of the model means that a Big Five personality battery can easily be included in most surveys. Though psychologists sometimes employ Big Five batteries with more than twenty items for each trait, several studies have demonstrated the adequacy of brief batteries using two or three items to measure each trait (Gosling et al. 2003; Mondak et al. 2010; Rammstedt and John 2007; Woods and Hampson 2005). In addition, we can use the Big Five to examine the robustness of pre-existing findings linking personality with political behavior. The Big Five has shown consistency and replicability across language, culture, and content of adjectival markers. This consistency makes it an ideal tool for applying personality to different areas of research (Ozer and Reise 1994) including comparative politics.

All of this is not to suggest that the Big Five is the last word in personality research. Psychologists continue to work at revising and refining the specific dimensions of the Big Five and exploring traits that may not be fully captured by a Big Five framework. For example, Saucier and Goldberg (1998) looked at a host of attributes (including clearly non-personality dimensions such as height, girth, and employment status) to see what potentially could be "beyond" the Big Five. They found relatively few traits that were independent of the Big Five, with the most notable being religiousness, youthfulness, and negative valence (characterized by

extremely unfavorable descriptors such as “awful,” or “evil”). The Big Five does not encompass everything, but given its broad scope and wide acceptance, any other traits studied should be placed in a context of the value they add above and beyond the Big Five. A growing number of studies have already taken various Big Five dimensions into account and seen significant results. Marcus et al. (1995) found a link between emotional stability and political tolerance. Kowert and Hermann (1997) used the Big Five in a study of foreign policy decision-making. Caprara, Barbaranelli and Zimbardo (1999, 2002) compared elite personalities with public perceptions of those personalities and found that mass perceptions focus on extraversion and agreeableness and that elites and citizens of the same party converge in terms of personality attributes. Mondak and Halperin (2008) was the first study to look for links between all five traits and a wide range of politically relevant dependent variables. They found that different Big Five personality dimensions had significant effects for party identification, ideology, political participation and levels of political information. The link between personality traits and ideology has been explored further, and the consistent findings are that conscientiousness is related to political conservatism and openness to experience is related to liberal views (e.g. Alford and Hibbing 2007; Carney et al. 2008; Mondak 2010; Mondak and Halperin 2008). Gerber et al. (2010) expanded on this research and found that personality traits influence economic and social attitudes differently, and that contextual factors influence the relationship between traits and attitudes. The link between personality traits and political participation has been explored both in the U.S. context (Mondak 2010; Mondak et al. 2010) and cross-nationally (Mondak et al. 2010; Mondak et al. 2011). Finally, the Big Five can also be studied at the elite level. Dietrich et al. (2011) surveyed state legislators in three states and found that, as in the mass public,

openness to experience was linked to ideological liberalism and conscientiousness with conservative views.

Next Steps

Political behavior research has long been focused on the importance of the various environmental factors that shape citizens' attitudes and actions. In recent years, a novel research agenda has highlighted the role biological factors play. At the same time, there has been a resurgence of interest in personality traits in political behavior research, made possible by the rise of the Big Five in trait psychology. Though these streams (traditional environmental research, biology and politics, and personality and political behavior) have generally been viewed separately, the crucial next step for political behavior researchers will be to think about how they all fit together.

Traditional research focusing on the uniform influence of environmental factors has no place in its causal story for biological influences of any sort, including personality. Thus, in terms of the basic antecedents of political behavior, this work can be visualized in very simple terms, as demonstrated by Figure 1.1. This is not to say that scholars operating within this framework hold such a simplistic notion of the causal forces shaping political behavior, but their empirical work can be reduced to these terms. Similarly, work on the influence of genes on political behavior can be reduced to a simple causal story, visually represented in Figure 1.2. Early work on the heritability of political behavior was totally focused on establishing that genes played a role, but this work was less concerned with demonstrating what that role was. With biology now clearly established as an important factor, we must work to understand just how genes exert their influence on political behavior. Similarly, the personality research described

above is undeniably useful, but without proper context it is unclear what we are to make of the results. What does it mean when we find an effect for openness to experience on political engagement? What can we do with that information? Once again, early work on personality tells an overly simplistic causal story (depicted in Figure 1.3). Each of these research strands is telling an important part of the story, but without some idea of how the different causal forces fit together, our accounts of political behavior will remain incomplete. In order to make progress, we must think carefully about what personality effects really are, and what they can tell us about the role of biological predispositions and environmental factors in shaping behavior.

My goal in this dissertation is to place the findings of personality research into this broader context. Figure 1.4 provides a visual depiction of how I believe personality effects operate and how we should go about studying political behavior. This figure takes each of the disconnected threads shown in Figure 1.1, 1.2, and 1.3, and tries to show how the pieces fit together. The bold lines represent the key factors at play when personality traits influence political behavior. I will discuss each of these in greater detail, but in brief, personality traits are hypothesized to represent an important mediating factor between genes and political behavior. As discussed earlier, it is hard to imagine how biology could exert a direct influence on political behavior and so there is no direct path in Figure 1.1 between these two points. Personality is likely a key mediator, and it is the focus of this research, but it is not the only mediating force between biology and political. Figure 1.1 accounts for this by including a path to additional mediating factors which would include those biologically influenced forces that are not encompassed by the Big Five. For example, cognitive ability (Denny and Doyle 2008) and physiological reactions to threatening stimuli (Oxley et al. 2008) have both been found to be

related to political behavior and both have some basis in biology, but they are not captured by any of the Big Five dimensions.

Personality traits are hypothesized to mediate the effect of biology on politics, but the effects of personality traits are not operating in a vacuum. As political scientists have known for years, the environment plays a crucial role. Peoples' personality traits interact with environmental factors to influence political behavior. This interactive model captures the notion that an environmental stimulus will have different effects depending on the disposition of the individual being affected. Of course, it is possible that there are homogeneous personality trait or environmental effects (hence the dashed lines in Figure 1.1 connecting both directly to political behavior), but I contend that such effects will be rare. The vast majority of political behavior will result from the interaction between basic dispositions, and variation in the environment in which that behavior is situated. The three empirical chapters of this dissertation seek to empirically test the theoretical framework represented in Figure 1.1, by examining each link represented by the bold lines.

First, personality traits provide an important mechanism through which biology influences politics. Using a variety of methods, researchers have consistently found that approximately 50% of the variance in personality traits across any given population will be attributable to genes (e.g Bouchard and Loehlin 2001; Matthews and Deary 1998). Perhaps because of this substantial heritable component, the Big Five has been found to be remarkably stable in adulthood (Costa and McCrae 1988). This stability lends support to the notion that links between personality traits and political behavior are indicative of an underlying causal relationship running from traits to politics. It is difficult to imagine, given what we know about

the peripheral role played by politics in most peoples' lives and the stability of personality traits, that the act of voting or putting up a yard sign is causing changes in a persons' personalities.

As work has accumulated demonstrating that ideology (Alford, Funk, and Hibbing 2005) and political participation (Fowler, Baker, and Dawes 2008) have strong heritable components, scholars have speculated that personality could provide a crucial intermediate link between genes and politics. For example, Fowler, Baker, and Dawes stated that "an important area of research will study the extent to which the link between genes and participations can be explained by genetic variation in inherent personality traits" (2008, 244). Mondak made a similar argument and he noted that up to this point "the claim that personality functions as a mechanism connecting genes and politics has been established only by inference" (2010, 188). In the next chapter, I address this concern by studying the links between Big Five traits, political behavior, and genes within a single research design. Drawing on a recent survey of twins focused on politics I am able to ascertain the degree to which correlations between traits and political variables are due to a shared genetic component. In doing so, I can establish that personality traits are playing an important role as an intermediate step between genes and politics.

Establishing personality traits as an important biologically-based disposition represents a key step, but as we investigate links between personality and politics it is important that we work to place new findings in context. Early work on personality and politics has been content to explore direct relationships between traits and a variety of dependent variables. This kind of study represents a useful first step, but it suffers from at least one major limitation. Though personality traits remain extremely consistent over time, individuals are constantly being placed in different environmental circumstances. A study of direct personality effects can tell us that extraverts will tend to behave socially, or that conscientious people will seek to meet their

responsibilities, but variation in the environment will dictate when extraverts can distinguish themselves from introverts (more so at parties, less so at funerals) or what the conscientious person sees as her responsibilities. One of the great advantages of personality traits is that they provide the researcher with the ability to craft rich theories of behavior which have clear mechanisms linking individuals to their behavior under different environmental conditions. Studies of direct effects largely miss out on that opportunity.

To demonstrate the importance of an approach that incorporates environmental factors, individual dispositions, and the interaction of the two (as represented in Figure 1.1), I incorporate personality traits into studies of two different research areas. Chapter Three discusses the importance of personality for how people discuss politic and construct their social networks. I demonstrate that personality traits affect how much people talk about politics and where they hold these discussions, and I also show that personality traits are important for understanding how citizens are in turn influenced by the political discussions they have. Chapter Four incorporates personality traits into the study of rationality, decision making, and judgments of utility. I show that people will behave more or less "rationally" based on the interaction between the circumstances of the decision and their personality traits. The findings suggest that we should broaden our conception of utility to account for the notion that what factors into a utility judgment will vary substantially based on characteristics of the individual.

These two research areas do not even scratch the surface of where a personality-environment approach can be enlightening, but I believe they represent a good starting point. Both research agendas represent "tough tests" of the theory that personality plays an important role in shaping behavior in interaction with the environment. The literature on political discussion has been overwhelmingly focused on the importance of the environment in

determining how much people talk politics and with whom. Similarly, the literature on decision making has fairly narrow expectations about what constitutes "rational" utility judgments. Deviations from utility maximization have typically been seen as being the result of bounded rationality, where the deviation was the result of various constraints that produced a lack of understanding of the correct course of action. I seek to demonstrate that many times when people deviate from the expectations of economists, they do so for reasons that perfectly comport with an economic view. That is, people are behaving rationally, but what they want differs based on their individual characteristics.

None of the three empirical chapters that follow represent the last word in their respective areas. Instead, they are first steps that demonstrate the importance of devising models of human behavior that take individual differences seriously without forgetting about the important role played by the environment. The richest and most satisfying theories going forward will incorporate both elements. By integrating the biological, with the environmental, the immediate with the long-term, and the political with the general psychological, we can forge a much stronger understanding of how humans behave in the political world.

Chapter Two: Genetic Covariation between the Big Five and Political Behavior

Some people never participate in politics. No matter how much money candidates spend on advertising they will not turn out to vote. No matter how passionately interest groups plead they will not sign a petition or donate to a cause. They will stay home from rallies and change the channel to avoid watching televised debates. At the other end of the spectrum are people who live and breathe politics. These individuals volunteer their free time and their money to support causes and candidates. They not only vote in every election, no matter how minor the office, but they might also offer to drive others to the polls to give their like-minded neighbors a chance to participate. In between these two extremes are a host of people who strike a balance between political activity and other demands. Such a citizen might always vote but stop at voting; or she might vote and donate money to her favorite candidates. An individual's political world is highly customizable.

Scholars of political behavior have scrutinized variation in participation closely and have identified a multitude of factors that influence participation, including individual-level demographic characteristics and psychological resources (e.g. Leighley and Nagler 1992; Plutzer 2002; Stoker and Jennings 1995; Verba, Schlozman, and Brady 1995), features of the institutional context such as the nature of the election laws or characteristics of the campaign (e.g. Ansolabehere et al. 1994; Rosenstone and Wolfinger 1978), or social factors such as the political discussions people engage in, the neighborhood context, or political socialization (e.g. Huckfeldt and Sprague 1995; Mutz 2002). All of these factors seem to influence participation, but they still only explain a limited portion of the variation.

Notably absent from the study of participation for many years was any acknowledgement of a possible role for biological factors. Perhaps genetic predispositions could help to explain

why some people who the literature would predict to participate based on their resources (wealthy, well-educated, etc.) never engage in politics, while others who would seem to be unlikely participants become extremely active. This possibility was proposed and tested by Fowler, Baker, and Dawes in their seminal 2008 article, which found that over 50% of the variation in political participation in two different surveys could be attributed to genetics. This finding is important, but it also presents a whole new set of questions regarding the nature of genetic influence. How can participation in politics be genetically heritable? Mass politics is an extremely recent phenomenon in the scope of human history. The ideas behind mass politics date back a couple of thousand years at most, and for the most part the practical opportunity to engage in the political world really only emerge over the last 200 years. This reality makes it difficult for some to imagine how genes could play any role in shaping politics, which seem so dependent on social and institutional context.

However, just because there is no "voting gene" does not mean that genetics are irrelevant to politics. The idea of a "gene for" anything misunderstands how genetics actually influence complex social behaviors (see Smith et al. 2011 for a discussion of this idea). The actual influence of genetics is likely to be much more complicated. At the end of their article, Fowler, Baker, and Dawes (2008) suggest that one possible means to understand the heritability of participation is through the genetic heritability of pro-social personality traits. They speculate that "genes may influence voting and political participation because they influence a generalized tendency to engage in social behavior" (Fowler, Baker, and Dawes 2008, 244). This idea has tremendous intuitive appeal, but up until now it has gone untested. But recent work investigating the influence of personality traits (particularly the Big Five framework) on political participation

provides me with a unique opportunity to expand our understanding of how genetics shape political behavior.

Research investigating the influence of personality traits on political behavior has taken off in the last few years. Incorporation of the Big Five into our models has proven fruitful in helping to explain a wide range of political attitudes (Mondak and Halperin 2008; Mondak 2010; Gerber et al. 2010) and behaviors (Gerber et al. N.D.; Gerber et al. 2011; Hibbing, Ritchie, and Anderson N.D.; Mondak 2010; Mondak et al. 2010; Mondak et al. 2011). As this work has demonstrated the importance of individual psychological predispositions, scholars working in this area have started to turn their attention to careful consideration of why political behavior scholars should care about personality traits. A number of rationales for why we should care about personality traits present themselves.

First and most obviously, the studies listed above have found a host of significant relationships between the Big Five and the dependent variables that interest political scientists. Clearly, there is some connection between personality and political behavior. This fact alone is not terribly persuasive. We might, if we were for some reason possessed to look, find a correlation between voter turnout and preference for pancakes over waffles, but this correlation probably would not help us explain voting in any meaningful way. A second, somewhat more persuasive reason for studying personality is that the link between individual psychological predispositions and political behavior makes a great deal of intuitive sense. In our day-to-day lives, we frequently attribute all kinds of behaviors to personality traits. If an introverted friend sits quietly at a party, we understand that this is a reflection of who he is and how he behaves in social situations. If a different, extraverted friend were to exhibit the same behavior we would notice that she was not behaving in her usual way and wonder if something was wrong. This

same logic can easily be applied to politically relevant situations. We would not be surprised to learn that a curious and adventurous friend had attended a political rally and spoken her mind, or to observe a particularly agreeable family member shying away from a particularly contentious political discussion.

By itself, intuitive appeal would still fall short of a satisfying justification. Intuition does not always hold up under scrutiny. However, in this case the intuitive appeal of a link between personality traits and political behavior is representative of deeper theoretical advantages that attention to traits provides. Specifically, traits are broad, stable psychological constructs. The breadth of the Big Five should be evident when we consider the nature of traits. Traits represent a general tendency to behave in a certain way that is consistent across different situations. An emotionally stable person will remain calm in the face of deadlines at work and will stay composed when a cancelled flight disrupts the family vacation. This does not mean that emotionally stable individuals never lose their cool but it does mean that those instances are the exception and not the rule. The natural breadth of traits helps us be confident that when we study the links between traits and political behavior we have the causal order correct. It is much easier to believe that extraversion inclines individuals to volunteer for a specific campaign, rather than thinking that volunteering for a campaign makes a person imagine themselves as extraverted. For most people, politics simply does not play a prominent enough role to believe that traits are being driven by political behavior.

The other key feature of traits is that they are stable. A great deal of research has investigated whether people are consistent over time in their personality self-assessments (e.g. Caspi 2000; Costa and McCrae 1988; McCrae and Costa 2003; Rantanen et al. 2007). The repeated finding is that personality changes very little, especially after age 30, except for modest

changes as people age (Costa and McCrae 1994). In part thanks to this considerable stability, a number of scholars have sought to determine the degree to which personality traits are genetically heritable. This sizable body of research has consistently found approximately 50 percent of the variance in personality traits are attributable to genetic influence (a detailed discussion of this literature can be found in the next section). The substantial biological basis for personality traits places us on firmer ground in believing that broad, stable, traits like the Big Five are causally prior to the participatory behaviors we would like traits to explain, and provides us with a plausible mechanism for understanding how genes influence political behavior.

While research on the heritability of personality has been ongoing since the late 1960's, work on the heritability of political behavior is a much more recent phenomenon. There is a reasonable amount of work demonstrating the heritability of political attitudes and ideology (Martin et al. 1986; Alford, Funk, and Hibbing 2005; Hatemi et al. 2010), but thus far relatively little work has investigated the heritability of political participation. The most notable work in this area is Fowler, Baker, and Dawes' (2008) article in which they establish a strong heritable component for voter turnout as well as other forms of political participation. The relative lack of studies of participation can be traced to data limitations. Most twin studies used to investigate heritability are compiled by psychologists who generally have interest in many topics not related to politics. This has forced scholars interested in the heritability of politics to make due with whatever political content happens to find its way onto a twin study.

In this chapter I pull together some of these disparate strands of research in order to paint a more complete picture of the relationship between personality and political behavior and the biological bases of each. Psychologists have firmly established a biological basis for personality traits. In recent years political scientists have generated significant evidence in support of the

notion that personality traits influence political behavior. Finally, there is preliminary evidence to suggest that political behavior is to some degree genetically heritable. The natural question then becomes: to what degree is the heritability of political behavior a result of the heritability of the personality traits that we know influence behavior? Thus far, scholars have suggested that personality traits might be a crucial intermediary between genes and political behavior (see Mondak 2010; Mondak et al. 2010; Fowler, Baker, and Dawes 2008), but this supposition has been based on the indirect evidence summarized above. In this chapter I make use of a new twin study that contains measures of the Big Five, as well as unprecedented political content. This study allows me to examine all of these factors within a single research design. If I can establish that there is substantial overlap between the heritability of personality traits and the heritability of political behavior that would provide a strong case for the importance of studying personality traits as evidence for biological effects. In addition, this would provide a key link in the complicated causal chain between genes and politics. The next sections of the chapter will describe in greater depth the disparate literatures which form the theoretical basis for this chapter. Next I will introduce the dataset being used and present the results from several univariate ACE-models on the heritability of personality and political participation. These results represent some of the first work on the heritability of participation to extend beyond voting. Finally, I will present multivariate twin models which examine the heritability of participation and personality traits and the degree to which that heritability is shared before concluding with some comments on what the findings mean for political behavior research going forward.

The Heritability of Personality

There are three features of the body of research on the heritability of personality that become apparent immediately. First, the sheer volume of research is staggering. To illustrate this, consider the following list of citations: Bouchard (1993, 1997), Bouchard and Loehlin (2001), Loehlin (1992), Matthews and Deary (1998), McCrae and Costa (2003), Pervin (2003), Sherman et al. (1997). This list constitutes only a partial review of the pieces which *review* the existing literature. Clearly, there has been no shortage of effort in investigating the heritability of personality.

The second notable feature is the variety of methods and measurement strategies that have been utilized. Studies of twins raised together constitute the most common method of studying the heritability of personality, with recent examples including: Jang et al. (1998), Loehlin (1992), Loehlin et al. (1998), Riemann, Angleitner, and Strelau (1997), Waller (1999). In addition to conventional twin studies, scholars have studied twins separated at birth (Bouchard and McGue 1990; Tellegen et al. 1988) as well as utilizing non-twin methods such as adoption studies (Loehlin 1992; Martin et al. 2000; Plomin et al. 1998) and family designs (Ahern et al. 1982; Loehlin, Horn, and Willerman 1981). In addition to a variety of research designs, these studies have also measured personality traits using a number of different scales including Eysenck's Personality Inventory and the Big Five. A recent study which does not fit into the behavior genetics research paradigm examined the brain structure of different research participants to see if variation in self-reported personality traits correlated with differences in brain structure (DeYoung et al. 2010). The authors' hypothesized relationships were supported for four of the five dimensions of the Big Five. So, for example, neuroticism was associated with greater volume in brain regions related to threat, punishment, and negative affect. This

work is intriguing as it has the potential to help us to understand the biological basis of the Big Five.

The third and perhaps the most important feature of the literature on the heritability of personality is that these numerous studies utilizing different methods and measures have produced remarkably consistent results. The broad consensus is that a moderate to sizable portion of variance in personality can be attributed to genetic factors (with heritability estimates usually hovering a little above or below 0.50). Shared environment (all influences twins share because they grew up in the same family, e.g. values, parenting practices, household routines) plays little to no role in shaping personality, while unshared environment (a residual category including all environmental factors not shared as well as measurement error) accounts for the remainder of the variance. Of course, there are questions around the margins regarding exactly how much should be attributed to genes. Non-twin designs tend to report lower heritability estimates (generally yielding estimates closer to 0.30 than 0.50, see Bouchard and Loehlin 2001) than their twin-based counterparts. On the other hand, several studies (Heath et al. 1992; McCrae et al. 2001; Riemann et al. 1997) have suggested that the conventional finding of heritability of 0.50 underestimates the actual influence of genes. These studies use a variety of techniques, including supplementing self-reports of personality with peer-reports and correcting for method bias, to improve the reliability of their personality measures. Riemann et al. (1997) report heritability estimates between 0.66 and 0.79 when using combined self and peer reports, and McCrae et al. (2001) find no evidence of five-factor structure in the unshared environment component of their data once they have accounted for measurement error. Regardless of the exact heritability, the voluminous extant literature appears to demonstrate that genetic heritability is the most important systematic influence on individual personality traits.

Personality and Political Participation

Investigations of the role played by personality traits on political behavior have only recently emerged (but see Mussen and Wyszynski 1952 for an early exception). Prior to this recent proliferation, political science research incorporating personality was usually narrowly focused on a particular facet of personality such as research on authoritarianism (Adorno et al. 1950; Stenner 2005) or self-esteem (Sniderman 1975). The only research that incorporated a trait approach based on the Big Five was work on political tolerance (Marcus et al. 1995) and this work generally focused on a limited number of traits. There has also been some recent work by Denny and Doyle (2008) which examines the role played by predispositions such as personality and cognitive ability that, while not explicitly looking at the Big Five, does discuss how the measures and findings align with a Big Five approach.

The research which explicitly focuses on the role played by the Big Five in political participation has yielded notable results (Mondak and Halperin 2008; Mondak 2010; Mondak et al. 2010). Openness to experience and extraversion are the two traits most associated with political participation, with extraversion having its greatest effects on social forms of participation such as attending public meetings or contacting representatives. Conscientiousness and neuroticism are not as strongly related to participation, but when significant relationships are uncovered they are generally negative. Agreeableness appears to be mostly unrelated to participation. Most of these findings are intuitive, with the possible exception of the negative results for conscientiousness. Most people would probably expect individuals who are responsible, diligent, and dutiful to be active in public affairs. It appears that the relationship between conscientiousness and participation is more complex than that. On balance, more

conscientious individuals are less likely to participate in politics, but this pattern does not hold for those conscientious individuals who perceive campaign activity as important (Mondak et al. 2010) or have high levels of external efficacy (Mondak 2010). In those cases, conscientious individuals participate at rates that match or exceed less conscientious people.

Overall, there is solid evidence to suggest that personality traits contribute to political participation. When this is combined with the research on the heritability of personality discussed above, it becomes possible to speculate that personality effects are evidence of a biological basis for political participation. This argument has been advanced by Mondak and colleagues (Mondak 2010; Mondak et al. 2010). The contention gains even greater support when we consider the final line of inquiry: the heritability of political participation.

The Heritability of Political Participation

The empirical record on this point is the thinnest of the three, but the one in-depth study in this area is strongly suggestive. Fowler, Baker, and Dawes (2008) study validated voter turnout data from a twin registry in California as well as data from the National Longitudinal Study of Adolescent Health which allowed them to study the heritability of other participatory behaviors such as contributing money to a campaign or attending a political rally. Across both datasets, Fowler and colleagues find that genetics account for over 50% of the variance. Thus, all of the links in a causal chain are now well-established. Both personality and political participation are substantially heritable, and there are clearly links between personality and participatory behavior.

Data, Measures, and Univariate Results

Before proceeding with an examination of how these different components fit together, I first replicate some of Fowler and company's findings regarding the heritability of participation. I make use of a new study of twins drawn from the Minnesota Twin Family Registry. This is the first study of twins to be focused on political attitudes and behavior. The Minnesota Twin Family Registry contains approximately 8,000 twin pairs recruited in middle age between 1983 and 1990 (see Lykken et al. 1990, and Krueger and Johnson 2002 for more information on the registry). For this particular survey, twins born between 1947 and 1956 were used, meaning that all participants in the survey were between 53 and 61 years old at the time of the survey. The bulk of the data were collected via web surveys conducted between July and December of 2008, with a supplemental data collection carried out between July and October of 2009. From this effort, data from 1349 respondents were collected. Of these 1192 were part of a matched twin pair, and the analyses were conducted on those 1192 respondents (see Funk et al. 2010 for more information on the data).

The measures of personality available in this dataset make use of the questionnaire item format. This measurement approach, which has been championed by McCrae and Costa, provides respondents with statements and asks them to assess the degree to which they agree (or disagree) with those statements. Response options follow the standard Likert-scale format. Examples of the statements used include: "I really like most people I meet" (agreeableness), and "I have a very active imagination" (openness to experience). The dataset contains 10 items for openness to experience (alpha=0.82), 9 for conscientiousness (alpha=0.76), 9 for agreeableness (alpha=0.74) and 8 each for extraversion (alpha=0.86) and neuroticism (alpha=0.83).

In order to estimate the genetic heritability of these traits it is standard practice to make use of the classical twin design. This method relies on the known genetic differences between monozygotic (MZ) twins who are genetically identical and dizygotic (DZ) twins who, on average share 50% of their genes. The logic of the twin design is straightforward and is based on just a handful of key assumptions. Perhaps the most important is the assumption that all twin pairs raised together, regardless whether they are MZ or DZ, share a set of common environmental influences (e.g. same parents, same socio-economic status, same broader cultural influences). If these sort of environmental influences are thus held equal and MZs are more similar than DZs on a given trait, that similarity must be due to genetic rather than environmental influences. This "equal environments assumption" has been the source of some recent controversy (Alford, Funk, and Hibbing 2008; Beckwith and Morris 2008; Charney 2008; Hannagan and Hatemi 2008). A key point of the equal environments assumption (EEA) is that it does not require that MZ and DZ twins have identical environmental experiences. It is well established that MZ twins are more likely to be dressed alike or to share the same bedroom (Loehlin and Nichols 1976). These violations of the EEA are only problematic if they lead to greater co-twin similarity on the trait of interest. Thus far, no empirical evidence has been presented to suggest that EEA violations are problematic for political behavior, and the findings of twin studies have been buttressed by research that does not rely solely on twins (Hatemi et al. 2010).

The essential aim of the methods employed in twin studies is to take the variance of an observed trait and partition it into three latent (unobserved) variance components. These are all variance attributed to broad sense heritability (technically additive genetic effects or A), all non-genetic variance that makes twins similar to each other (seen as the influence of common environments, or C), and all variance that makes twins dissimilar to each other (seen as the

influence of unique environmental experiences, this variance component also includes all error and is termed E). There are a number of methods that can be employed to achieve ACE variance partitioning, though the most commonly employed are structural equations models (SEM). In simple terms, a classic twin design SEM is just a set of equations with a set of known or assumed values (e.g. observed variance-covariances, the degree of genetic relationship between MZs and DZs) and a set of unknown values (the latent ACE terms). The known values are used to estimate the unknowns; mainstream approaches do this iteratively using maximum likelihood techniques that converge on the most probable ACE values given the known elements in the equations (for a comprehensive introduction to twin study methodology see Medland and Hatemi 2009).

Table 2.1 displays the bivariate correlations for personality traits between twins, divided into MZ and DZ pairs. When the correlations of MZs are higher than the comparable correlation for DZs it provides preliminary evidence of genetic influence. Specific ACE estimates generated from the structural equations procedure described above, along with their associated confidence limits, are shown in the last three columns of Table 2.1. Consistent with past research these results show that the shared environment does not play a significant role in shaping personality traits. The heritable component is somewhat smaller in this data than I would expect from past research for two traits: agreeableness (0.22) and conscientiousness (0.25). However, the heritable components for both are still significant, and the heritable components for the other three Big Five traits are in line with past findings.

Shifting from personality traits to political behavior, this dataset contains a number of indicators of political participation. As a measure of voting behavior, respondents were asked the following question: "Think about all of the presidential elections since you were old enough to vote, have you voted in all of them, in most of them, in some of them, rarely voted in them, or

have you never voted in a presidential election." In addition to this question about voting, respondents were provided with a number of other participatory behaviors and asked if they had ever engaged in any of the activities listed. The activities were: attending a political meeting or rally; working in a political campaign in any capacity (including unpaid volunteer work); contributing money to a political party, candidate, or any other political cause; holding any government office (no matter how minor); or communicating thoughts or requests to a government official. Each of these items was answered simply yes or no, but all of the items were also combined into a 0-5 participation scale (alpha=0.70).

Beyond these standard participation items the survey also included a question asking if the respondent was a member of any political groups such as Democratic or Republican clubs or a political interest group such as the Sierra Club or the National Rifle Association. Respondents had three response options. They could claim to be an active group member; a non-active group member or they could indicate that they were not a member of any political group. The survey also included an item of identical (3-response option) format which asked about membership in community groups or clubs (such as hobby clubs, unions, fraternal organizations, neighborhood associations, or church groups). Also included were items asking respondents to assess how often they discussed politics with others and how often they discussed politics with people who disagree with their views. Both items provided four response options: very often, somewhat often, not too often, or never.

Finally, I also examined measures of self-reported political interest and objective political knowledge. While these are not strictly measures of political "behavior," they are of interest to scholars of behavior and they have not been examined in twin designs, unlike measures of political attitudes and ideology. The political interest item asks: "How interested are you in

politics and public affairs?" Respondents have four response options ranging from "very interested" to "not at all interested." The political knowledge scale is constructed from five civics questions asking who is responsible for deciding whether a law is constitutional, who is responsible for nominating judges to the federal court, which political party is more conservative at the national level, how much of a majority is needed in Congress to override a presidential veto, and what is the main duty of the U.S. Congress.

Table 2.2 compares the MZ and DZ correlations for all of the political measures just described. Again, when correlations are higher for MZs compared to DZs it provides preliminary evidence of a genetic influence on the trait. The last three columns of Table 2.2 presents ACE estimates and associated confidence levels using the same structural equations approach described above. The findings are fairly consistent. For almost all of the measures examined genes account for between one third and one half of the variance, with the rest being attributable to unshared environment. For all of the measures examined the variance attributable to common environment is substantively miniscule and statistically insignificant. Of the five yes/no participation items, all have a significant heritable component of 0.46 to 0.54 except for attendance at a political rally which had an insignificant heritability estimate of 0.27. The overall participation index has a heritability score of 0.44. The highest heritability estimate among the other significant measures is political knowledge (0.52) and the lowest is frequency of political disagreement (0.26). The only measures with insignificant heritable components (besides attendance at a politically meeting or rally) were the questions asking about membership in political and community groups. Though these were insignificant, the heritability estimates for both were right in line with the other findings (estimates of 0.32 and 0.36 respectively).

There are two key points to take away from the univariate results. First, I find that a host of political dependent variables, including participation measures beyond voting, have significant heritable components. Independent of my interest in personality these findings are important because they reinforce the point that traditional models of political attitudes and behaviors that are strictly environmental are missing a substantial source of variance (Alford, Funk, and Hibbing 2005; Fowler, Baker, and Dawes 2008). The estimates from my data suggest that almost 40% of the variance in voting is accounted for by genes, with 44% of non-voting participation accounted for by genes. Over half of the variance in political knowledge was accounted for by genetics. Until very recently, our explanations of political behavior have attempted to explain political action exclusively environmental factors. If we want our explanations to improve we must account for the 40-50% of the variance that we have traditionally ignored.

The second point to take away from these findings is that in addition to the political variables just discussed, the personality indicators also show significant genetic heritability. This is in keeping with the extensive body of literature discussed above that found a sizable heritable component for personality traits. Because both sets of variables are correlated, we can investigate whether the covariation between personality traits and political behavior can be explained in part by genetics. Conceptually this is a logical extension of the classic twin design and its associated assumptions to more than one trait. A univariate analysis essentially tries to answer this question: How much of the observed variance in trait X is attributable to A, how much to C and how much to E? A multivariate analyis asks the same question about the covariance between two (or more) traits: How much of the observed covariance between trait X and trait Y is attributable to A, how much to C and how much to E? Thus if we think of a

standardized covariance measure between two variables—i.e. a simple correlation—the purpose of a multivariate analysis is to take that correlation and partition it into three parts representing A, C and E. A common approach to doing this is to employ a simple factor model within the structural equations framework to identify the common sources of covariance in two or more traits (this basic approach is called a Cholesky decomposition (see Medland and Hatemi 2009 for an in-depth description of the Cholesky decomposition). If a significant heritable component is found, i.e. the proportion of covariance between two traits attributable to A is non-trivial and non-zero, it would provide evidence that the heritability of politics and the heritability of personality operate through common genetic pathways.

Bivariate Models

My expectations for the bivariate ACE models are derived from past work on the links between personality traits and political participation. From this work, my primary expectations revolve around openness to experience and extraversion. Both of these traits have been consistently found to be significantly related to a variety of participatory behaviors. Openness to experience is positively related to virtually all forms of political participation, as well as a number of other variables related to political information-seeking such as political interest and knowledge (Mondak 2010; Mondak et al. 2010). Extraversion's links to politics are somewhat more nuanced. For the most part, extraversion has been found to be related to social forms of political engagement, but it has not been consistently associated with non-social forms of participation such as voting or putting up a political yard sign (Mondak et al. 2010). Nor has extraversion been linked with political interest or knowledge (Mondak 2010). For the remaining three Big 5 traits my expectations are mixed. For most forms of political activity,

conscientiousness has negative signs (meaning conscientiousness is generally de-politicizing), and neuroticism has positive signs but these relationships are significant and insignificant in roughly equal proportion (Mondak et al. 2010). It should also be added that some scholars have found neuroticism to be negatively related to political activity (Gerber et al. N.D.). These ambiguous results suggest that I might not find much of a relationship between conscientiousness, neuroticism, and political activity at the genetic level. Finally, agreeableness consistently fails to produce any semblance of a relationship with any of the political dependent variables examined here. As a consequence I have no expectations regarding agreeableness.

The results of the multivariate models are reported in Table 2.3. The first column in Table 2.3 presents the bivariate correlations between each of the Big Five traits and the political variable. If the correlation is significant then the subsequent columns present the standardized ACE decomposition of this covariance. Table 2.3 is divided into four sections, with each corresponding to a political variable. Table 2.3a decomposes the variance between the Big Five and voting behavior. As expected, openness to experience has a large and highly significant correlation with voting. The bivarate correlation between openness and voting is .10. The A estimate of .84 next to the correlation indicates that 84 percent of this covariance is attributable to common genetic influences. In other words the correlation between openness and voting due solely to genetic influences would be .084. The C estimate is negative—which makes mathematical but not substantive sense—thus the remaining source of covariance should be seen as E. Reducing to an AE model, i.e. treating C as zero has no impact on the model's fit to the data. The results of the AE model in the first row of Table 2.3a estimate the proportion of the correlation between openness and voting due to A is .77 and to E .23 (i.e. the .10 correlation can be thought of as the product of a correlation of .077 due to genetic sources of covariance and a

correlation of .023 due to unique environmental sources of covariance and error). There is also an unexpected, but relatively modest significant correlation between voting and agreeableness for which I have no theoretical explanation. The other Big Five traits are insignificant as expected. Recall that voting, as a non-social form of political participation was not expected to be related to extraversion. When the variance in Table 2.3a is decomposed, it is clear that the A (genetic) component is sizable for both openness to experience and agreeableness, with the shared environment having no impact whatsoever.

Next I consider the other political participation items. Because of the properties of the Cholesky model, I focus on the participation scale with each of the individual dichotomous items combined. These results are presented in Table 2.3b. As expected, the two strongest correlations are for openness to experience and extraversion. The bivariate correlation between openness and participation is 0.25, and the correlation between extraversion and participation is 0.16. Once again, the C component is negligible for both traits, meaning that an AE model is more appropriate than an ACE model. The 0.25 correlation between openness and participation can be broken down into an additive genetic component of approximately 0.19 (0.25*0.77) and an unshared environmental component of 0.06 (0.25*0.24). For extraversion the 0.16 bivariate correlation breaks down into a genetic contribution of 0.09 and an unshared environmental contribution of 0.07. In addition to these two, neuroticism also is significantly related to political participation, with approximately 80% of the correlation traceable to genetics (0.079 from a correlation of 0.10). As noted above, the existing evidence surrounding neuroticism has been somewhat mixed, which tempered my expectations somewhat, but this is not an unexpected finding by any means. As with the voting results, the decomposition reveals a sizable heritable component and a miniscule and insignificant role for shared environment.

Next I turn from measures of participation to some indicators of psychological engagement to politics. Table 2.3c presents the results for political interest. Here we see that openness to experience once again has the highest correlation, with a large extraversion correlation and a more modest correlation for neuroticism. The strong extraversion result is somewhat surprising given that extraversion has not been linked with psychological engagement in past work. In examining the decomposition, it is clear that neuroticism shows no significant heritable component. Both extraversion and openness, on the other hand, have significant heritable components when we examine the AE model. For almost all of the models studied, the AE model fits as well as the ACE, and therefore is the more appropriate choice. The only exceptions are the voting behavior models in Table 2.3a, where the ACE is the more appropriate model.

Table 2.3d contains the results for political knowledge. Here we see substantial correlations between knowledge and two traits: openness to experience neuroticism. The sizable correlation for openness to experience is expected, but the high correlation between neuroticism and political knowledge is not. Past research has linked openness to experience and conscientiousness with knowledge, but no such relationship has been found for neuroticism (Mondak 2010). Once again, both correlations show large and significant heritable components with no role for shared environment.

Conclusion

Over the last few years, a stream of research has accumulated suggesting that a solely environmental account of political behavior is inadequate. This work has demonstrated that political behavior has a strong genetic component (Fowler, Baker, and Dawes 2008), but what

remains to be determined is *how* genes influence politics. One popular speculation has been that genes may influence political behavior by influencing personality traits that are relevant to that behavior (Fowler, Baker, and Dawes 2008; Mondak et al. 2010). Though intuitively appealing, this expectation has not been investigated empirically.

This chapter set out to address this shortcoming. Using a new twin study focused on political behavior, I examined personality traits and political behavior in one genetically-informative research design. In doing so, I uncovered several important findings. Before discussing those further, it is important to keep in mind the limitations of the present study. First, my data set provides unprecedented precision in the measurement of concepts relevant to political behavior, but it suffers from a relatively small sample size. This limitation manifests itself most directly for the measures of personality traits. Correlations between MZ and DZ twins are supposed to be significant. Not surprisingly, in my data all of the MZ correlations are highly significant ($p<0.001$), but the DZ are somewhat more problematic. The DZ correlation for agreeableness is not significant, and the DZ correlations for openness and conscientiousness are borderline ($p<.10$ and $p<.07$ respectively). The lack of findings for agreeableness should not be taken as strong evidence of no relationship. The quality of the data is such that no firm conclusion for this trait can be drawn.

The second limitation of my study is that they are drawn from only one survey. Replication is an important part of any research agenda, and particularly so for twin studies, which are often specific to a narrower population (in this case twins in Minnesota). There is no theoretical reason to think that the findings reported here are artifacts of the research context, but the possibility should be kept in mind. Replication in this instance is difficult because this data is

unique in terms of the breadth of political content, but it will be important to obtain more politically rich twin surveys in the future.

With those caveats noted, I can turn to a discussion of the findings of this study. First, and most importantly, I found that a substantial portion of the correlation (usually over 50%) between personality traits and political behavior could be traced to genetics. Personality traits play an important role in explaining political behavior and much of their explanatory power can be traced back to a common genetic source. A second crucial finding was that shared environment played almost no role in the correlations between personality traits and political behavior. Personality traits and political behavior are correlated, but this correlation is not the result of parents socializing their children to hold certain traits and behave in certain ways politically. This finding fits nicely with past work which has found no significant role for shared environment in explaining variation in political participation or personality traits. Political scientists have traditionally emphasized the importance of parental socialization, but we are finding increasing evidence to question this traditional framework.

As research on biology and politics has progressed, scholars have speculated that personality traits act as important mediators between genes and political behavior. At the same time, scholars studying the links between personality and politics have noted that personality traits are largely rooted in genetics. My results, which examine genetics, personality traits, and political behavior within the same research design, support both of these notions. Our understanding of personality effects is enriched when those effects are considered as part of a theoretical framework that places genes, personality traits, and political behavior into a larger context.

Chapter Three: Personality and Political Discussion[2]

I now turn from an examination of the biological basis of politics, and the role of personality as a mediator between genes and political behavior, to an investigation of how personality traits interact with the environment. Traditional political behavior research has long recognized the importance of environmental factors, but when we consider the environment without also taking into account the innate characteristics of the individual, we risk overlooking important individual-level variation. A parallel lesson also applies to early work on personality and political behavior, which has generally considered the influence of personality traits generally, with little consideration of the environment. Our traits influence our behavior by shaping how we respond to the environment around us. Depending on their personalities, two individuals will react to the same environmental stimuli in different ways. At the same time, depending on their personalities, those same two individuals are likely to select into different environments. This ongoing and reciprocal interaction between people's innate dispositions and their environmental circumstances represents a promising but understudied research area. In this chapter, I seek to explore these relationships more fully by examining a research agenda that has been heavily focused on the influence of the environment.

Most forms of political participation require a conscious decision to break from the routine of our everyday life to engage with the political world. We choose to stop off at our polling place after work to cast a vote. We go outside to pound a candidate's sign into our yard. Or, we miss spending a Saturday afternoon at home to attend a political rally. Most participation then can be seen as a series of deliberate choices about how much time to devote to political

[2] Material from this chapter appears in Mondak, Jeffery J., Matthew V. Hibbing, Damarys Canache, Mitchell A. Seligson, and Mary R. Anderson. 2010. "Personality and Civic Engagement: An Integrative Framework for the Study of Trait Effects on Political Behavior." *American Political Science Review* 104: 85-110 and Hibbing, Matthew V., Melinda Ritchie, and Mary R. Anderson. 2011. "Personality and Political Discussion." *Political Behavior*, forthcoming.

matters, operating within a clearly defined context. Consequently, most studies of political participation focus on the role played by the individual citizen in choosing whether to participate and how much time to spend on political matters.

One important form of political participation does not seem to fit neatly into this view of atomized individual citizens making deliberate choices: political discussion. People's political views are constrained by the information and ideas to which they are exposed through discussion with individuals in their social networks. It is partly through political discourse that our political beliefs, values, and identities are molded and our ideas about current events are influenced. These conversations are held with our families, neighbors, co-workers, friends, and even casual acquaintances, and occur in the everyday settings of our lives. Political discussion can reaffirm our original beliefs or cause us to question what we thought we knew. Either way, talking politics with those in our social networks affects our ideas and behavior. Scholarship in this area has shown that social communication matters for a wide array of other political phenomena such as attitude formation, electoral choice, other forms of participation, levels of political expertise, and tolerance. Thus far, research on the underpinnings of political discussion has focused on social and contextual forces such as the nature and origin of the relationship between conversation partners (e.g., Huckfeldt and Sprague 1995; Mutz 2006; Walsh 2004), as well as features of the national political context (e.g., Anderson and Paskeviciute 2005; Gibson 2003; Iglic 2003; Mondak and Gearing 2003).

Despite this clear evidence of contextual influences on patterns of discussion, I believe that too little attention has been devoted to individual-level factors beyond basic demographic considerations such as sex, age, education levels, income, and the like. Where and with whom we discuss politics influences how we think and what we do, but perhaps a more fundamental

question is whether people's introduction into these contextual situations and their responses to them differ based on the individual. Specifically, I contend that psychological predispositions captured by individual personality traits play an important role in shaping the kinds of conversations citizens engage in, the setting for those conversations, and the influence discussion may or may not have on the individual. It is my thesis that many of the social and contextual factors listed above are the result of the interplay between individual predispositions and the social context. Individuals may be constrained by their social settings, but they can choose how to behave in the situations presented to them. When a co-worker tries to start a political conversation over a current hot-button issue, one type of person might jump headlong into a heated argument; another might politely downplay any disagreement; while another might simply refuse to discuss controversial political matters. Individuals differ in their reactions to political discussions, and one reason they do so is based in their own personalities.

Establishing the connection between psychological predispositions and political discussion is important for several reasons. First, given the many significant consequences of discussion, it is crucial that we develop a strong understanding of the antecedents of political conversations. If personality traits affect where and with whom people talk about politics and the consequences of those discussions, we cannot simply think of the effects of discussion being universally accessed across the entire population. Some people could be absorbing more from discussion than others, and this variation might be politically consequential. Second, because political discussion is a social activity, and one constrained by other social influences, I see it as an especially rigorous test case for research on the political consequences of personality. If micro-level psychological differences are shown to matter for patterns in the most social of political activities, this should be viewed as highly promising regarding the prospects for

personality to influence more individualistic phenomena such as attitude formation, information acquisition, and the like. Third, by applying the Big Five personality framework in research on political discussion, I will generate evidence regarding the framework's breadth. Much of the early work on five-factor personality models sought to explore the content of the factors themselves and to provide evidence on reliability and validity in measurement. Only recently have scholars begun conducting widespread assessments of the impact of the Big Five traits on human behavior. Hence, this effort may shed new light on the tangible value of five-factor approaches.

In this chapter I build on recent research demonstrating the importance of personality traits for various aspects of political behavior. This work has made use of the Big Five trait taxonomy (described further below) and I follow a similar approach. Political discussion has not been a particular focus of this research, but several findings are of direct relevance to my examination of personality, political discussion, and social influence. In the next section I will highlight those findings, and discuss some literature from outside of political science which has examined the role played by personality traits and other predispositions on social (but not necessarily political) interaction. Next I will outline the empirical tests, present my expectations based on trait theory and the existing research that touches on traits and political discussion, and present the results of the analyses. Finally, I will discuss the implications of these findings for research on political discussion.

Psychological Predispositions and Social Interaction

Research on political discussion has generally focused on contextual factors. This does not mean individual factors have not been considered at all, but when they have, inquiry

typically has centered on the importance of demographic characteristics. Huckfeldt and Sprague (1995) address the ways that individuals tend to discuss politics with people who resemble themselves, and how men and women differ in the kinds of discussion networks they create. Lake and Huckfeldt (1998) demonstrate that income, education, age, and race are all significant predictors of the size of a respondent's political discussion network, and that wealthier and more educated individuals are more likely to have higher levels of political expertise within their networks. There is also a substantial body of research on the influence of demographic variables on network characteristics outside of political science (see Roberts et al. 2009). These studies demonstrate that scholars of social influence recognize the importance of individual factors. However, this research has not generally accounted for psychological predispositions such as personality traits. This is understandable considering that personality traits have only made their way into most other aspects of political behavior research within the last three or four years.

Outside of political science, research on social influence has taken personality traits and other psychological predispositions into account more often, but certainly not with regularity. Mehra et al. (2001) note that social networks research rarely includes psychological factors, and then proceed to analyze the role of self-monitoring (a psychological construct relating to how much people respond to social cues) in network behavior in the workplace. They find that high self-monitors are more likely to build relationships that cross group lines. Swickert et al. (2002) find that among a sample of undergraduates, extraverts are more likely to have larger social networks and more contact with those networks. Kalish and Robins (2006) find effects for both extraversion and emotional stability on the structure and closeness of networks. Klein et al. (2004) examine how personality traits influence the role people play in their social networks. They find that individuals who are high in emotional stability are more likely to occupy a central

role in their networks. Finally, Roberts et al. (2008) find that extraversion is positively related to the size of an individual's most intimate social contacts (the "support clique" in their terminology), but they find that this effect disappears when respondent age is taken into account.

Within the last few years, political science studies have started to incorporate personality traits into the study of political behavior. These studies have included variables that are pertinent to research on political discussion, but they have generally not been explicitly focused on discussion. The one exception is a study by Klofstad (2009) which seeks to determine if political discussion leads to civic engagement or if it is just a biproduct of that engagement. Using a quasi-experimental design, Klofstad is able to show that political discussion does have a positive effect on civic engagement in his undergraduate sample. Most importantly for my purposes, Klofstad attempts to account for psychological predisposition to participate as measured by political interest prior to arrival at college. This is obviously not a personality measure, but it represents an attempt to incorporate psychological predispositions into a model of political discussion. Not surprisingly, Klofstad found that the positive effect of political discussion on participation was weaker among those individuals who were predisposed against civic engagement.

I now turn to the recent research that directly examines the influence of Big Five traits on political discussion. Mondak and Halperin (2008) examine the possible effects of personality traits on a host of political attitudes and behaviors. Included in this broad examination were variables on the number of days in the past week the respondent had discussed politics (measured across two different surveys) and measures of national and local political discussion frequency (measured on a four-point scale from 0=never to 3=very often). Their results show that openness to experience and extraversion are both positively related to political discussion for

three of the four survey indicators. Conscientiousness also seems to be related to political discussion with a significant positive effect for two of the four indicators. Both agreeableness and emotional stability have consistently negative coefficients for all four discussion indicators, but only one reaches significance for each, so conclusions for those two traits should be made with caution.

In this chapter I build upon this burgeoning literature with several contributions. First, I examine the role played by personality traits on basic features of discussion, such as the size of respondents' social networks and respondents' willingness to try and convince others to vote for or against a particular candidate. I also investigate the frequency of political discussion broken down by the setting for that discussion. Specifically, I examine how much people talk about local politics with their families, friends, neighbors, co-workers, and members of their clubs and churches. Past research demonstrates that social interaction at church can play an important role in shaping the political attitudes of church members (Wald, Owen, and Hill 1988; Huckfeldt, Plutzer, and Sprague 1993), that neighborhood conversations can be an important source of information (Huckfeldt and Sprague 1995; Grober and Schram 2006; Walsh 2004), and that workplaces are unique in their potential for exposing citizens to disagreement (Mutz and Mondak 2006). Clearly, the setting in which discussion occurs can be important for the kinds of behavioral outcomes discussion can engender, and it is possible that personality traits influence the settings where citizens choose to engage in political discussions.

The second contribution is to examine the influence of personality on the nature of citizens' relationships with their discussion partners. The form of relationship linking discussants has been found to have a significant impact on the type of information that is transmitted by discussion. In classifying individuals' interpersonal contacts, a common tactic in

the literature entails distinction between close friends or relatives and more casual acquaintances. Discussions with more casual acquaintances are thought to be more beneficial because they are associated with such interrelated phenomena as the improved diffusion of information (Granovetter 1973), the presence of bridging forms of social capital (Putnam 2000), and exposure to disagreement in social communication (Mutz 2006; Mutz and Mondak 2006). The closer and more insulated a person's discussion network is, the less likely the individual is to be exposed to novel information (Huckfeldt et al. 1995). Little is known regarding any possible systematic tendencies of the individual to seek to confine political discussion to close ties, a situation that prompts me to consider whether the nature of the relationships between respondents and their discussion partners vary with personality.

Next, I investigate how respondents' personality traits influence their exposure to disagreement in social communication. A chief attribute of political discussion is its capacity to expose participants to new information and differing points of view. Conversations with like-minded others may offer a person reassurance and support, but such conversations do nothing to broaden the person's perspectives. In contrast, when political discussion crosses lines of difference, it brings the potential to foster beneficial effects such as political tolerance and the awareness of the rationales underlying opposing viewpoints (e.g., Mutz 2006; Mutz and Mondak 2006).

Finally, I examine the influence discussion partners have on respondents to see whether this influence could be enhanced or inhibited by the personality traits of the respondent. There is ample evidence to suggest that citizens are influenced by the people with whom they discuss politics. These tangible consequences of discussion represent one of the major reasons why the study of political discussion has flourished so much over the last thirty years. Huckfeldt and

Sprague (1991) found that the political preferences of discussants influenced respondent vote choice, even when partisanship and demographic characteristics of the respondent were accounted for. When this finding is combined with the inherent heterogeneity of most political contexts (Huckfeldt and Sprague 1987) it makes a powerful case for the persuasive influence of political discussion. I test to see whether personality traits play a role in determining how influential discussion can be.

Data and Personality Measures

In this chapter, I draw on data from two surveys that included ten-item Big Five batteries, a community survey fielded in 2004 and a national survey administered in 2006. The community survey was conducted within a single medium-sized metropolitan area in late 2004. Interviews were completed by 822 respondents. Most of the items on the survey concerned the topic of sense of community, along with corresponding measures of respondents' levels of involvement in various social and political settings in the local area. A number of general questions regarding patterns of political discussion were included, along with a battery regarding the one individual with whom each respondent most often discusses local political matters. I make use of both types of discussion items below.

The national survey I use is the 2006 Congressional Elections Study (CES), administered at Indiana University (for further discussion of these data, see Mitchell and Mondak 2009). The survey was designed with primary focus on the 2006 midterm elections. There were 1,023 interviews completed before the November elections, with 766 of these respondents reinterviewed after Election Day and an additional 400 respondents interviewed in a supplemental post-election survey. Respondents are drawn from 155 congressional districts,

with districts including a mix of some that were selected randomly and some that were determined to be either open seats or competitive contests.[3] The post-election instrument included a brief discussant generator that asked respondents to identify up to four political discussion partners, along with information regarding how each discussant voted in the 2006 House election. The ten-item personality battery also was included on the post-election instrument.

On both surveys, respondents were asked to rate themselves on ten bipolar personality items. On the national survey, for instance, interviewers read this introduction to respondents:

> The following section contains pairs of words. On a scale of zero to ten, please tell us which word best describes you. For example, the number zero means "relaxed," the number ten means "tense," and the number five is exactly in the middle—neither relaxed nor tense. On this scale, what number best describes you? You can use any number from zero to ten.

A very similar introduction was employed on the 2004 survey. On both surveys, subsequent items were asked in quick succession, with interviewers saying, for example, "next, zero is kind and ten is unkind."

Because some trait items are susceptible to social desirability biases, with people tending to view themselves as kind, responsible, open-minded, etc., I erred on the side of caution and used a logarithmic transformation in the construction of all final scales as a means to minimize the possible impact of skewed distributions on individual items, and to maximize comparability across the trait measures. Specifically, each item initially was recoded so that a value of one represents the highest possible value on the trait in question. These recoded variables then were logged. Final trait scales were constructed by averaging the logged indicators for the two items asked for each trait, and then recoding the resulting values to range from zero (lowest observed

[3] Roughly half of respondents were drawn via the random sample and half via the oversample of competitive districts. In analyses using these data, the data are weighted to recapture the properties of a national probability sample.

value) to one (highest observed value). Data on the item pairs and resulting Big Five measures are depicted in Table 3.1[4].

The Context of Discussion

The first empirical question I address is a simple one: Is the size of a person's political discussion network influenced by the individual's personality traits? As discussed earlier, past research (Swickert et al. 2002) has demonstrated that, unsurprisingly, more extraverted individuals have larger social networks. In addition to this positive extraversion effect, I expect openness to be positively related to political discussion network size, in large part because openness has been associated with information seeking and incidental exposure to information (Heinstrom 2003). I have weaker expectations for the other three traits. All three have generally had negative effects on political behavior (Mondak and Halperin 2008), so if they show effects on discussion network size, it is most likely that those effects will be negative.

The 2006 national survey contains a discussant name-generator that allows respondents to identify up to four people with whom they discuss politics. This measure of discussion network size (0 to 4 discussion partners) is the dependent variable in an ordered logistic regression model presented in the first column of Table 3.2. In this model and all of the others that follow, I include four basic control variables: age (Mean=55.66, SD=15.47), race

[4] Note that the number of cases on the community survey always equals 822, which is the number of respondents on this survey. In working on the present study, I discovered that due to a combination of coding and software errors on the part of the company contracted to conduct this survey, I am not able to identify and exclude missing cases on the Big Five items. Interviewers used specific key strokes to indicate "don't know" and "refuse" responses, but these responses were coded to have values of 8 and 9, respectively, which also are valid values on the 0 to 10 personality scales. The survey company was able to report to us how many "don't know" and "refuse" responses there were for each item, but, despite repeated attempts, it was not able to recode these cases so that they could be differentiated from cases with substantive responses of 8 or 9. For the ten individual personality items, there are between four and eighteen "don't know" and "refuse" responses, with a mean of 9.9, among the 822 respondents. Thus, I know the actual average "don't know" and "refuse" rate to be 1.2 percent. I have no definitive means to identify and remove these cases, and thus my analyses are hampered by the slight decreases in reliability that accompany treating all answers of "8" and "9" as genuine substantive replies.

(1=African American), gender (1=female), and education (a scale ranging from 1 to 8; Mean=4.70, SD=1.92). I find that more educated respondents have larger political discussion networks and that African Americans have somewhat smaller networks than respondents of other races. Turning to personality traits, I find that openness to experience and extraversion are both strongly associated with larger discussion networks exactly as expected, and that emotional stability is inversely related to network size. These findings comport with past research (e.g. Mondak and Halperin 2008) which shows that openness and extraversion are positively related to most political activity.

The 2006 data also includes an item asking if respondents have tried to convince other people to vote for or against a candidate (1=yes). This is an interesting item because it allows me to investigate how personality traits are related to a willingness to influence others. I predict that openness and extraversion will be positively related to trying to influence others, while I expect emotional stability and agreeableness to be negatively associated with attempts to influence other. Individuals with high levels of emotional stability are likely to be comfortable with disagreement and thus not feel the need to try and persuade others, while agreeable people will not attempt to convince others of their position because such conversations naturally come with a certain amount of conflict. The results of the binomial logistic regression model are in the second column of Table 3.2. Openness to experience has a remarkably large effect on a person's willingness to try and convince another person to vote for or against a candidate. Emotional stability has a significant negative effect, but the expected negative agreeableness effect is not apparent. Surprisingly, extraversion is not significantly related to trying to influence the vote of others, although the coefficient is in the expected direction ($p<0.18$).

Next, I turn my attention to the influence of personality traits on the setting for discussion. The 2004 community survey includes items asking respondents to assess the frequency of their discussions of local politics in six different settings. These settings are: at church, in their neighborhood, in the workplace, with family, with friends, and with members of clubs or other associations. For each item, respondents answer on a four point scale ranging from zero, indicating that they never discuss local politics in that setting, to 3 if they discuss local politics in that setting "very often." Past research demonstrates that political discussions in these contexts differ in several ways, including their propensity to expose citizens to disagreement. The workplace is particularly notable for fostering disagreement in conversation (Mutz and Mondak 2006); conversation with friends and neighbors and is also more likely to expose people to disagreement than discussions in places of worship, clubs or within families (Mutz 2006, 28). These features help to guide my expectations regarding personality traits and frequency of discussion across contexts. First, we know from past research (Mondak and Halperin 2008) that extraversion and openness to experience are generally associated with more frequent political talk, and I demonstrated earlier in the chapter that those traits are also associated with larger discussion networks. I do not have strong expectations that these traits will predispose citizens to strongly favor one discussion context over another. It seems likely that extraversion could predispose individuals to be particularly active in more formal settings where their natural sociability helps them to overcome institutional constraints. As a consequence I expect extraversion to be associated with discussion at work, at church, and in clubs and associations. Openness to experience has been linked to both incidental information exposure and the expenditure of effort in information seeking (Heinstrom 2003). Therefore, I

expect openness to be particularly important for discussions in contexts that foster disagreement such as the workplace and among friends.

Predictions regarding conscientiousness are complicated by the somewhat mixed empirical record. On the one hand, this trait dimension has been found to be generally associated with lower levels of political participation (Mondak and Halperin 2008). However, these effects have generally not been significant when considering political discussion, and there is some evidence to suggest that conscientiousness may be positively associated with frequency of local political discussion (Mondak and Halperin 2008). Consequently, I expect conscientiousness to be positively linked with discussion of local politics in those contexts that are most likely to be directly affected by local issues. Specifically, I expect more conscientious individuals to discuss local politics more frequently with their neighbors, in church, and with members of their clubs and associations. Finally, I have fewer expectations for the remaining traits, emotional stability and agreeableness. There is little in the empirical record to lead me to any strong conclusions, although intuition might lead me to expect agreeableness to be negatively associated with discussion in contexts that foster disagreement such as among friends and in the workplace.

Table 3.3 presents ordered logistic regression models for each of the six contexts. As discussed above, the dependent variable in each of these models is a four point scale measuring how frequently the respondent discusses local politics in that context. For each context Table 3.3 contains two models, and I begin the discussion of these results with a focus on the odd-numbered columns. Similar to the earlier models, controls are included for respondent age (Mean=46.09, SD=17.37), education (measured on a seven-point scale; Mean=3.69, SD=1.89), sex (1=female), and race (1=black). Age is associated with more frequent discussion with family, in the neighborhood, and at work. African Americans discuss local politics more

frequently in their clubs and associations, at work, and especially in their churches and places of worship. There does not appear to be a relationship between gender and discussion context except for the marginally significant ($p<.07$) finding that women discuss politics less frequently at work than do men. And perhaps surprisingly, education is not consistently related to more frequent political discussion. More educated individuals discuss politics more frequently only at work and in their clubs and associations.

Turning to the Big Five, I find that conscientiousness affects frequency of discussion in the expected manner. Conscientious individuals discuss politics more frequently in their neighborhoods and clubs. I also find that higher conscientiousness is associated with more frequent discussion with family members. Though this was not one of my hypotheses, it is not difficult to imagine that conscientious people would be more inclined to discuss issues of local importance with their families. Extraversion also influences discussion patterns in the manner I expected, with all positive coefficients and significant effects for the most formal settings: clubs, churches, and the workplace. In these contexts, the outgoing nature of the extravert helps overcome institutional constraints that might discourage political discussion. Openness to experience is significantly related to discussing politics with friends, but not with any other contexts. I expected this relationship, but I also thought openness might be related to workplace discussion because those conversations are most likely to foster disagreement. My weakest expectations were for agreeableness and emotional stability, and not surprisingly, those two traits are not significantly related to discussion in any of the six contexts I examine.

One potential concern with these results is that personality traits might be influencing a general tendency to discuss politics regardless of context. Past research demonstrates that openness to experience, conscientiousness, and extraversion have been found to positively

influence general patterns of discussion. While some may argue that there is no reason to examine discussion on a context by context basis, I contend the opposite is the case. It is important to establish that trait effects matter over and above a general tendency to talk politics and that individuals approach contexts differently, thus the extent to which trait effects matter will be influenced by the context. To pursue this matter, I replicate the six context models, but this time including a variable that captures how frequently the respondent discusses politics generally (coded on the same four-point scale as the dependent variables). These models are reported in the even numbered columns of Table 3.2. The first thing to notice when examining these models is that general frequency of political discussion is a large and highly significant predictor of discussion within each distinct context. This makes sense given that, regardless of context, one would expect a general tendency to talk about politics to be important. For my purposes, the most important thing to note is that, for the most part, the personality effects remain even when general discussion is included as a control. This is particularly true for conscientiousness which is again positively related to discussion with family and neighbors. The conscientiousness effect for discussion with club members is strengthened, and with general discussion included, there is evidence of a marginally significant ($p<.07$) positive effect for discussions in church. In contrast with conscientiousness, when general discussion is included the effect of openness to experience on discussion with friends vanishes and the extraversion effects are all diminished. The significant links between extraversion and discussions at work and with friends drop to insignificance. However, it should be noted that even with the diminishing of the effects, significant relationships remain for discussion in clubs ($p<.01$) and church ($p<.06$).

Taken together, these results make sense. Openness to experience and extraversion are both strongly related to a general tendency to discuss politics (Mondak and Halperin 2008). Naturally, the context-specific effects will diminish when general discussion is included as a control. Even accounting for general discussion, extraversion produces significant positive effects on frequency of discussion in formal settings such as in clubs and at church, and conscientiousness is a significant predictor of discussion in four of the six contexts.

In order to provide a sense of the magnitude of these personality effects, I calculate predicted probabilities for the conscientiousness and extraversion effects on frequency of discussion in clubs and other associations (model 8 in Table 3.2). I do this by varying each trait from zero to one while holding all other values constant (non-black female of average age and education). The predicted probability of a respondent discussing politics either somewhat or very often (the top two values on the scale) rises fifteen points, from 0.41 to 0.56, as conscientiousness goes from zero to one. The probability rises 21 points, 0.39 to 0.60, when comparing an extreme introvert to an extreme extravert. Clearly, these results demonstrate that variation in personality traits can have a substantial impact on frequency of discussion across a range of contexts.

The Respondent-Discussant Relationship

Up to this point, my analysis has been centered on respondents' general discussion habits. For the remaining investigations I will focus on the individual with whom the respondent most commonly discusses politics. The community survey prompts consideration of this person by stating the following:

> Of all the people you discuss these local issues with, think about the one whom you have discussed these with the most. We are going to refer to this person as your discussion partner for the set of questions that follow.

After this prompt, the respondents answer a series of questions on the nature of their relationships with their discussion partner and their discussants' political views. These questions are the basis for the analyses that follow.

The survey asks respondents to characterize the nature of their relationship with their discussion partner. For my purposes, those respondents who talk politics most frequently with a family member or a "close friend" are classified as having an intimate tie. Approximately 68 percent of respondents named an intimate tie as their discussion partner. Those respondents who characterized their discussion partner as "just a friend," or "just someone they came in contact with" were classified as discussing politics with a casual tie. Approximately 21 percent of respondents have a casual tie, with the remaining 11 percent not naming a discussion partner at all. In examining these data, I retain all three categories by estimating a model via multinomial logistic regression, with "casual tie" functioning as the contrast category. Plausible effects can be foreseen for several of the Big Five traits. First, individuals with low scores on emotional stability typically have a heightened psychological need for social reassurance, and thus they should be relatively likely to seek out conversations with close relations who are unlikely to challenge their views. Respondents scoring high in agreeableness and conscientiousness also are predicted to avoid political discussion with casual acquaintances. Introverts also are expected to limit conversations to close associates.

Coefficient estimates for the full multinomial logistic model are displayed in the first two columns of Table 3.4. The first column contrasts having no discussant versus discussing politics with a casual acquaintance. Here, we see that none of the personality variables is significant,

although agreeableness comes the closest ($p<.12$), with an effect as expected. Educated individuals and African Americans are more likely to discuss politics with a casual tie. The second column, contrasting discussing politics with a casual tie versus an intimate one, provides support for one of my hypotheses. Emotionally stable people are more likely to name a casual acquaintance as their discussion partner. Once again, I speculate that this finding is driven by emotionally stable individuals' levels of self-confidence. Political discussions with casual ties are likely to lead to disagreement, but respondents scoring high in emotional stability appear to be comfortable enough with their own views to have such conversations.

To test this line of thinking further, I carry out a follow-up analysis. The survey asks respondents to estimate the level of congruence between their own views and those of their discussion partner on a three-point scale ranging from zero (respondent and discussant's views are "much the same") to two (respondent and discussant hold "very different" views). An ordered logistic model with this dependent variable is presented in the third column of Table 3.4. If my view of emotional stability is correct, high scores for that trait should be associated with a larger disparity between respondents' views and the views of their discussion partners. Examining the results, this is exactly what I find. The strong positive emotional stability effect indicates that respondents with higher emotional stability scores were more likely to have a discussion partner with different political views. To demonstrate the substantive significance of this effect I calculate the predicted probability that a respondent would have a discussion partner with views that were either "somewhat different" from the respondent or "very different" (62 percent of respondents discuss politics with someone whose views are "much the same"). With all other variables held constant as before, the probability of discussing politics with someone who holds different views rises from 0.26 to 0.45 as emotional stability rises from zero to one.

There is also a moderately significant ($p<.08$) negative relationship between openness to experience and discussant disagreement, suggesting that individuals high in openness are good at self-selecting into discussions with likeminded individuals. But the real story from these results is the sizable emotional stability effect. The natural tendency of most people is to discuss politics with close friends and relatives who generally agree with them. Emotional stability plays an important role in overcoming this tendency and exposing those individuals who possess the trait to novel and divergent views.

Exposure to Disagreement

A chief attribute of political discussion is its capacity to expose participants to new information and differing points of view. Conversations with like-minded others may offer a person reassurance and support, but such conversations do nothing to broaden the person's perspectives. In contrast, when political discussion crosses lines of difference, it brings the potential to foster beneficial effects such as political tolerance and the awareness of the rationales underlying opposing viewpoints (e.g., Mutz 2006; Mutz and Mondak 2006).

Much of the research on political discussion in recent years has examined communication that yields exposure to disagreement (e.g., Huckfeldt, Johnson and Sprague 2004; McClurg 2006; Mutz 2006). These works have excelled in documenting the effects, mostly positive, of cross-cutting political discourse, and they also have shed light on the social and contextual factors that give rise to such conversations. We know, for instance, that weak ties and discussants met via contexts such as the workplace are more likely to expose a person to different points of view than are strong ties and discussants drawn from contexts such as the church or the voluntary association (Mutz 2006). Likewise, we know that there is an

interdependence linking the members of a given individual's network such that the presence of like-minded discussants facilitates the retention of non-like-minded discussion partners within the network (Huckfeldt, Johnson and Sprague 2004).

One point of dispute in this literature concerns the impact of network size. As networks grow, the likelihood that they will include at least one person with a differing point of view rises (Huckfeldt, Johnson and Sprague 2004), but it also appears that aggregate homogeneity increases as networks expand (Mutz 2006). Here, I again suspect that personality may be relevant. Strong personality effects were observed above for network size, suggesting the presence of indirect effects on exposure to disagreement. Building on this logic, I propose that the impact of network size on a person's exposure to disagreement may be conditional on personality. The key point is this: as network size increases, any tendency toward homogeneity or heterogeneity should not be assumed to be constant for all individuals. Instead, I posit that the person's enduring psychological tendencies may predispose the person to prefer homogeneity within the network, or to accept heterogeneity.

For the moment, I treat network size as an environmental factor fully exogenous to individual choice. I know from findings earlier in the chapter that this assumption is at least partly incorrect. Table 3.2 shows that several of the Big Five traits influence network size. However, environmental forces obviously also play an important role in shaping an individual's network. What is important for my present purpose is that, however a network came to be of a given size, the impact of that network on exposure to disagreement may be contingent on personality.

On the 2006 survey, respondents were asked to indicate which way their discussion partners had voted in the local U.S. House race. I operationalize exposure to disagreement

within the network with a dummy variable coded 1 if at least one of the respondent's discussion partners cast a House vote at odds with the respondent's partisan affiliation, and 0 if otherwise.[5] With the analysis limited to the more than five hundred post-election respondents who named at least one discussant, a score of 1 is recorded in just over 41 percent of cases. The chief independent variable is network size, one of the dependent variables from Table 3.2. Four of the Big Five variables stand as strong candidates to moderate the impact of network size on exposure to disagreement. First, the rigidity of thought associated with conscientiousness suggests that individuals scoring high on this trait will strive to maintain homogeneity irrespective of network size. Second, the free-wheeling sociability of the extravert supports the hypothesis that extraverts will be relatively undiscriminating in their political conversations, in which case larger networks should magnify the odds of exposure to disagreement. Third, because people high in agreeableness tend to avoid conflict, I predict that the agreeable will surround themselves with like-minded discussion partners. Conversely, exposure to disagreement should be less disconcerting for individuals who are themselves disagreeable. Lastly, owing to their minimal need for social acceptance, I expect that individuals with high levels of emotional stability will tend to have heterogeneous discussion networks.

In Table 3.5 I report the results of two binomial logistic regression models. In the first, personality is omitted. Noteworthy effects are observed for strength of partisanship and network size. Specifically, strong partisans exhibit homogeneity in their discussion networks, but, as

[5] Exposure to disagreement occurs under this operationalization if a respondent who is a Democrat (or leans toward the Democrats) has at least one discussion partner who voted Republican in a 2006 House race, or if a respondent who is a Republican (or leans toward the Republicans) has at least one discussion partner who voted Democratic in a 2006 House race. For discussants, I only have vote data for the House vote, not partisanship. I opted to use partisanship rather than the House vote as my indicator for the respondents to avoid two shortcomings associated with use of the vote. First, many respondents did not vote. I lose 21 cases because respondents who are pure independents are omitted from my model, but more would have been lost had I excluded nonvoters. Second, by focusing on partisanship rather than vote choice among the respondents, I avoid uncertainty regarding whether respondents and discussants live in the same congressional districts—a point for which data are unavailable.

expected, the likelihood of exposure to diversity increases with network size. The second model in Table 3.5 adds the Big Five indicators, along with interactions between the Big Five and network size. Apart from the null findings for emotional stability, results are consistent with my expectations. A negative coefficient emerges for the interaction between conscientiousness and network size, although the effect falls short of statistical significance ($p < .12$). However, a significant positive interaction is observed for extraversion, along with a significant negative interaction for agreeableness. The likelihood of exposure to cross-cutting views may increase with network size, but the magnitude of this effect hinges on the individual's personality traits.

Predicted probabilities derived from the extraversion and agreeableness interactions are depicted in Figure 3.1. The two patterns bear a strong resemblance to one another. First, the positive effect of network size on exposure to differing political preferences is quite modest for introverts (a 10-point swing as network size increases from one to four) and for individuals scoring high in agreeableness (a 9-point swing). But second, much more dramatic effects are seen for extraverts and those with low marks on agreeableness, with a 50-point swing found for the former and a 58-point swing for the latter. The link between network size and exposure to disagreement represents more than the occurrence of a simple stochastic process. By their nature, some people are accepting of exposure to differing political views, whereas other people seek to surround themselves with like-minded conversation partners. Consequently, the extent to which an expansion in the size of a person's political discussion network translates into a higher probability of exposure to disagreement depends to a substantial extent on the individual's personality.

The Influence of Discussion Partners

Thus far, I have established that personality traits play a role in influencing where people discuss politics and with whom they converse. For my final empirical step, I consider the possibility that the influence of political discussion is contingent on personality traits. If traits can affect the kinds of political discussions we have, it is reasonable to expect that traits might also help to determine who is most responsive to information and argumentation provided by a discussion partner. The hypothesis for which I expect the strongest results posits that individuals high in openness to experience will be more influenced by political discussion. People who are very open to experience are more receptive to new information and ideas (Heinstrom 2003) and would therefore be more likely to reassess their own original political ideas in the face of divergent views. Extraverts value social interaction and have been described as "loyal followers" (Winter 2003). Because of these characteristics I expect those who score high on extraversion to be more likely to be influenced by political discussion. I have a similar expectation for agreeableness. Agreeable individuals are uncomfortable with conflict and therefore might feel compelled to bring their views into alignment with those of their discussion partner. Finally, I expect that individuals who are high in emotional stability will be resistant to the influence of political discussion. I have already demonstrated that emotionally stable people are comfortable discussing politics with people who hold different views, and it seems plausible that they would be similarly comfortable maintaining their views in face of disagreement.

To test these hypotheses I model respondents' approval of President Bush using the 2004 community survey. The dependent variables is a four-point scale ranging from zero ("strongly disapprove") to three ("strongly approve"), so once again I use ordered logistic regression. I first present a baseline model which excludes personality traits. This model includes the four control

variables used in earlier models (age, sex, race, and education) as well as the respondents' partisanship, ideology, and trust in others. The baseline model also includes a dummy variable for whether the respondent names a discussion partner (1=no named discussant) and a summary of the respondents' assessment of the political preferences of their discussion partner constructed from two items, discussant partisanship and discussant Bush approval. This variable is coded -2 (discussant is a Democrat who disapproves of Bush) to 2 (discussant is a Republican who approves of Bush). The results of this model are displayed in the first column of Table 3.6. Not surprisingly, the respondents' party identification is the most important predictor of approval of President Bush, with ideology also serving as an important influence. The political views of the discussant are comparable to ideology in their influence on respondent approval of President Bush. Social influence does seem to be at work in the data.

Next I expand this baseline model by including personality traits. I include the five traits, as well as interactions between each of the traits and the discussant-views variable. If an interaction term is significant it indicates that the influence of a discussant is contingent on the respondent possessing that particular personality trait. The results make up the second column of Table 3.6. Contrary to my expectations, I find no evidence that discussant influence is conditional on extraversion, agreeableness, or emotional stability. However, I do find a substantial support for the hypothesis which states that openness to experience is significantly related to discussant influence. To illustrate the effect, I use the model to predict respondents' approval of President Bush as a function of their openness and the views of their discussion partner. The results are presented in the first panel of Figure 3.2. The dependent variable (respondents' approval of President Bush) is represented along the y-axis. The x-axis represents the discussants' political views, with higher scores indicating greater sympathy for President

Bush (discussant as more Republican and more approving of President Bush). The two lines represent the maximum and minimum levels of openness to experience. All other variables, including the respondents' party identification, are held constant. As discussant favorability toward President Bush rises, a low-openness individual's Bush approval rises 50 points, from 0.22 to 0.72. Conversely, Bush approval rises fifty percent more steeply, from 0.09 to 0.84, for respondents receiving the maximum score on openness to experience.

Finally, I replicated the models just described with data from the 2006 national survey. Just as I did in my analysis of the community survey I utilize a four-point measure of presidential approval. The measure of discussant views is different, because the community survey only asked about one discussion partner while the national survey allowed respondents to name up to four. For the national data I constructed the discussant views measure by using the respondent's belief about the partisanship of his or her discussion partners. Each Republican discussant added one point to a respondent's score, while a Democratic partner subtracted a point. For example, if a respondent said she had two Democratic discussants and two Republican discussants she would receive a score of zero. The possible combined score ranges from negative four to positive four. In the analysis I also control for the overall size of the network.

As before, I begin with a baseline ordered logistic regression model of discussant influence that does not include personality traits. The results for this model can be found in the third column of Table 3.6. Predictably, I find large effects for respondent partisanship and ideology on their approval of President Bush. I also find that the partisanship of the respondents' discussion networks has a substantial influence on presidential approval. In the fourth column of Table 3.6 I add personality traits to the mix as well as interactions between the five traits and the partisanship of the discussion network. I find a significant effect for the interaction between

openness to experience and discussion influence. Individuals with high scores on openness to experience are more influenced by the partisan makeup of their network. Once again, I calculate predicted levels of respondent Bush approval as a function of openness to experience and discussion influence (this time network partisan composition). The results here are more pronounced than they were for the community survey. As a discussion network shifts from overwhelmingly Democrat to overwhelmingly Republican, an individual with the lowest score on openness becomes only 2 points more positive in the assessment of President Bush, shifting from 0.33 to 0.35. For an individual with maximum openness, the shift is a staggering 83 points, from 0.03 to 0.86, as the network changes from totally Democrat to totally Republican. The influence of discussion networks clearly hinges on the openness of the individual at the center of the network.

Conclusions

At the outset of this chapter, I outlined why I believe it is important for research on political to account for personality traits. The results presented here strongly support the notion that research on political discussion and social influence should consider dispositional characteristics such as the Big Five along with the demographic and environmental variables that are most frequently studied. Personality traits consistently influence the nature of political discussions. Perhaps more importantly, the way personality shapes discussion follows logically from our theoretical understanding of both the traits and political discussion. Extraversion leads to larger social networks and encourages more frequent discussion, particularly in more formal contexts. Extraverts are also exposed to more disagreement than introverts as network size increases. Conscientiousness, though not associated with a greater general tendency towards

discussion, does lead citizens to more actively talk about local issues with the people who share those concerns such as family members, neighbors, and members of their church and local associations. Emotional stability helps individuals overcome a natural tendency towards discussing politics with likeminded people and leads to more conversations with casual acquaintances and people holding differing viewpoints, but discourages attempts to persuade others and leads to smaller discussion networks. Agreeable individuals are exposed to substantially less disagreement as network size increases. And openness to experience not only leads people to have larger discussion networks, but it also increases the likelihood that those individuals will try to influence the people with whom they discuss politics and it leads them to be more influenced by their discussion partners.

It seems clear that personality traits play an important role in shaping patterns of political discussion. Moreover, I contended at the start of the chapter that the social nature of discussion made it an especially rigorous test for the Big Five. The strong results presented should provide reassurance that personality traits are likely to influence most facets of political behavior, even those such as discussion, which are also constrained by contextual forces. The question is no longer whether personality matters but how exactly it matters. The role personality traits play in shaping political behavior is complex and conditional. Such relationships are more difficult to study, but ultimately more rewarding because they bring us closer to a rich and full explanation of why people do what they do politically. Not all of my hypotheses were confirmed, but for personality to truly enrich our understanding of political behavior we must know much more about how these traits operate in political situations. In that respect, the hypotheses that missed are just as informative as those that were confirmed by the data.

I hope that these findings will help to spur greater interest in individual-level predispositions among scholars of political discussion and social influence. Work in this area has done an excellent job of demonstrating the limitations of an atomized and isolated view of the average citizen. People do not exist in isolation until the moment they are called for a randomized national survey. Every day citizens mingle together, influencing and being influenced by their friends at work, their neighbors, or by family members. It does not undermine the importance of context if we also acknowledge that people will try to influence their context in whatever way they can. Accounting for personality traits allows us to push our understanding beyond where we can go with demographics. With a sophisticated understanding of individual predispositions we can begin to untangle the complicated interconnection between context and individual.

Chapter 4: Individual Choice, Economic Utility, and Personality Traits

In this final empirical chapter, I turn my attention to how individuals make decisions. When presented with two choices, what leads a person to choose x instead of y? On its face, this seems like it should be a relatively straightforward area of study, but the nature of how people choose has actually presented a puzzle to social scientists for many years. Much of this puzzling has boiled down to a debate over whether humans are rational actors or not. This debate has ebbed and flowed over the years as researchers started from a basic idea of utility maximization and then adjusted it to fit the realities of imperfect information, cognitive limitations, and biases regarding risk and the timing of payoffs.

I believe that our knowledge of individual decision making could be enhanced by acknowledging two points. First, individuals differ in terms of their personalities, and these personality differences are likely to have an impact on what different people value. Second, people face environments that are characterized by different sorts of incentives. If both of these points are recognized simultaneously, it becomes clear that the model I have developed in this dissertation could be quite enlightening for the study of decision making. An individual choice will represent the interaction of a person's individual traits and the specific environmental features surrounding that choice.

The popularity of a utility-based approach to human decision making largely stems from our desire to make sense of individual choices that otherwise would appear to be idiosyncratic. If people are weighing the costs and benefits of each of their choices (consciously or unconsciously) and selecting according to whichever action has the greater benefit, we as researchers have a fighting chance at understanding and predicting the decisions people make. On the other hand, if choices are the product of highly variable individual and contextual factors,

an understanding of the choices people make is likely to remain elusive. The true nature of individual decision making most likely rests somewhere in between these two extreme views. Idiosyncratic factors will always make prediction difficult, but we can try to isolate and understand the component of decision making that is consistent and systematic.

The utility approach has its roots in classical economics and rational choice theory. There are several assumptions that typically underlie the approach. First, individuals are expected to follow some kind of consistent decision rule. The most widely accepted decision rule in the extant literature is that people maximize utility. This simply means that for any given choice a person will choose the option that provides the most benefit or best serves her objectives (e.g. Arrow 1951; Downs 1957; Olson 1965 among many, many others). There are other decision rules that could be utilized, including finding the first available option that is "good enough." This concept is known as "satisficing" and it is most closely associated with Herbert Simon (1955, 1956). It should be noted that with a sufficiently broad conception of utility, satisficing can be seen as a form of maximizing behavior. It simply means that people are factoring in the value of their time and effort in addition to more tangible features of utility such as money, power, pleasure, and so on.

A second assumption holds that people can rank order their preferences. Being able to rank preferences simply means that if Jim prefers choice A to choice B and choice B to choice C, then he will also prefer A to C. It is also possible for two options to be preferred equally, but in this case Jim would be indifferent to the outcome between the two options. This allows people to have what Arrow (1951) called a "weak ordering of preferences."

From these two simple requirements, we could construct a very simple model of decision making that would do pretty well at predicting very straightforward decisions. For example such

a model would predict that a person would accept $50 instead of refusing it and receiving $0. We do not need to test such a proposition empirically to know that it is going to be highly accurate. However, scholars of decision making have quickly identified a host of complicating factors that make predicting behavior more difficult.

People often make mistakes because they lack all of the information necessary to make correct choices. In addition to a lack of information, some problems are of sufficient cognitive complexity that we will choose wrongly because we cannot calculate our expected payoff accurately. Millions of people play the lottery, even when doing so has a negative expected value. It is likely that many people do not understand the probabilities involved sufficiently, but they believe that the chance of a payoff outweighs the cost. Examples such as this have led scholars to see individuals as possessing rationality within the limits of certain cognitive and emotional biases and deficiencies, or "bounded rationality" (Simon 1947, 1957; for a review of literature on bounded rationality, see Jones 1999).

In addition to recognition of the fallibility of human decision makers, scholars have also recognized that context plays an important role in shaping choices. A wine connoisseur might choose a fine vintage bottle of Merlot over substantial financial compensation. But that same person would gladly trade the fine wine for a bottle of water when stranded in the desert. When I am ravenously hungry, food is worth much more to me than when I have just eaten. Economists have recognized these ideas for years, and adjusted their models accordingly. For my purposes, I want to highlight that there has been ready acknowledgement and correction made for contextual influences which shape preferences.

Another crucial development in the broader decision making literature blends work on cognitive limitations with research that examines the context in which choices are made.

Prospect theory (e.g. Kahneman and Tversky 1979, 1984; Tversky and Kahneman 1981) developed in response to the empirical failings of classical subjective expected utility. The traditional models, while theoretically clean and precise, consistently failed to predict the behavior of individuals in laboratory settings. Much of this difficulty can be traced to how expected utility theory dealt with risk. In classical theory decisions are made based on expected outcome values, with no regard for the risk involved. In other words, if given the choice between receiving $5 and a 10% chance of winning $50, classical theory (in its most basic form) would suggest that people would be completely indifferent. Even before Kahneman and Tversky, a sufficient body of evidence had built up suggesting that decision makers are not risk-neutral. This led scholars to build in a slight risk aversion into their models of decision making. By the time Kahneman and Tversky began their work, classical theory recognized that when given the choice between a sure payoff and a small chance for a bigger return, people generally prefer the sure thing.

Kahneman and Tversky pushed things even further when they found that how choices were framed could have a huge impact on decision making. For example, Tversky and Kahneman (1981) presented respondents with a scenario in which a disease was expected to sweep through the area and kill 600 people. Two treatment options were available, one of which would be guaranteed to save 200 people, but which also meant that 400 people were guaranteed to die. The other treatment option had a 1 in 3 chance of saving all 600 people, but a 2/3rd's chance that all 600 would die. When respondents were given the choice of *saving* 200 people versus a 1/3rd chance of saving nobody, 72% of respondents chose to save 200 (the risk-averse choice). However, when the choice was framed so that either 400 people would die, or a 1/3rd chance that nobody would die, only 22% of respondents chose the risk-averse option.

This sharp reversal is not a fluke or an artifact of this particular choice, as similar patterns have been identified with a number of different scenarios. Risk-seeking or risk-aversion can be fairly easily folded into a classic expected utility model of decision making. There is nothing irrational about a preference for sure things (or risk), even though a strict utility maximizer would be indifferent to such things. The real problem for expected utility theory comes from massive preference swings based on logically equivalent changes in question framing. It is difficult to interpret total preference reversal based on the switch from 200 lives saved to 400 deaths, within the framework of classic expected utility theory. Kahneman and Tversky addressed this problem by developing prospect theory, which conceptualizes decisions differently depending on how decision makers perceives their situation. When the decision is perceived to be in the domain of gains, people will make risk-averse choices, while decisions in the domain of losses lead to more risk-seeking choices.

One dimension that receives relatively little attention from either classical expected utility theory or prospect theory is the notion of individual variation in terms of tastes, values, and goals. It is widely recognized that there is variation in what people value (e.g. money versus leisure time) and that tastes play an important role in determining which movies people watch, which clothes they buy and where they go to eat. Despite this widespread recognition, the existing research strikes a somewhat uneasy truce with individual preferences. On the one hand, it is extremely difficult to deny the importance of individual differences, and the fact that the prevailing economic theory on utility-based decision making is "subjective expected utility theory" suggests that scholars recognize the need to acknowledge the "subjective" element in play. However, it is difficult to determine how best to account for tastes in a model that has any hopes of generalizability. Many scholars (at least within the rational choice field) have

minimized the importance of individual differences by arguing that preferences and tastes are relatively consistent across individuals, and that what differences do exist are better ignored in the name of parsimony (e.g. Stigler and Becker 1977; Goetze and Galderisi 1989). This tradeoff between explanatory power and parsimony is an important issue to keep in mind while considering the role of individual variation in decision making. With enough information, we could create the perfect decision making model for an individual, that was woefully inadequate for predicting the behavior of any other person. Unique utility curves for each person would not be a very satisfying approach to social science, but we should be careful about erring too far in the other direction. Some recognition of individual differences could be extremely useful in understanding variation in the choices people make, provided we are careful in how we conceptualize individual difference.

One way of dealing with the problem of individual difference that avoids the need for measurement of those differences is to place such concerns outside the scope of the research question. This method has been most popular among some rational choice scholars who seek to model the process of decision making with less of a priority placed on the substance of those decisions. Ferejohn (1991) makes a useful distinction between two different conceptions of rational choice theorizing. "Thin-rational" accounts posit rational preferences (rank-ordering, transitivity, etc.) but otherwise place no requirements on individuals. For thin-rational accounts, the substance of individual preference is irrelevant as long as preferences can be understood to follow the axioms of rationality. The danger of such approach comes from identifying a sensible and consistent preference ordering in the absence of additional assumptions about goals and preferences. If we trust revealed preferences, where behavior demonstrates what option a person preferred, all behavior can be characterized as rational because if it was not the preferred

outcome the person would not have done it. This tautology, where all behavior is rational by construction, and the difficulty in specifying the unique, internal preference ordering of individuals has led most empirical work on rational choice and decision making to adopt a "thick-rational" perspective (Green and Shapiro 1994). These thick-rational accounts make assumptions about human goals and preferences that stretch beyond the minimal requirements of thin-rationality. Usually, this stretching involves making fairly uncontroversial assumptions about the general desire for greater material wealth and power.

Making general assumptions about human goals is defensible, but it becomes much more problematic when paired with an assumption that individual differences are insignificant. If the choice being studied is very narrowly concerned with the acquisition of money or economic goods, or the decision is being made in a highly restricted institutional context, we may be safe treating individual variation as inconsequential. But when the choice involves trade-offs between different kinds of goods and/or values, it becomes increasingly problematic to assume that everyone will operate in the same way. Almost all people would prefer to have more money, more power, or more prestige, but we differ dramatically in the trade offs we would make to acquire more.

In the past, most research on individual differences in decision making has focused primarily on group identity or values. A group identity approach posits that psychological attachments to various reference groups will influence decision making either in addition to, or in place of, self interest. In this way, actions that appear to be irrational at the level of individual utility can be explained based on the well-being of a group. Of course, as a general theory of decision making, group identification is problematic. It is not clear how people make decisions when a particular group identity is not activated, and it is similarly uncertain how individuals

adjudicate between circumstances in which their identities are at cross-purposes or when their group identity clashes strongly with their individual interest. Most group-based theorizing seems to view pursuit of group interest as disengaged from individual utility calculations.

Research on individual values has a somewhat similar flavor to the work on group identification. Like the group-based work, research on values has generally seen individual values as stemming from psychological conditioning during childhood. In a values framework, decisions are made with an eye towards satisfying psychological needs. This view is not at all incompatible with a more rational choice influenced utility model, provided that the psychological needs can be meaningfully ranked along with more tangible material interests. However, most scholars of values-based decision making set their frameworks as opposing rational choice theorizing by arguing that values learned in youth often are held even after they cease to align with individual interests. This is unfortunate because without some form of utility-based calculation, it is extremely difficult to see how values can be used to predict behavior, instead of simply to rationalize that behavior post hoc.

One notable exception to the view that values represent a challenge to more rational choice style theorizing was Chong's (2000) book on opinion and value formation. Chong creatively added values and group identifications into an instrumental, utility based theory of decision making and opinion formation. By combining approaches that had previously been seen as mutually exclusive, Chong demonstrated that a utility based theory of decision making could include highly subjective, psychological elements (something proponents of thin-rational accounts would never question). He also demonstrated that values-based accounts do not have to be centered on expressive and noninstrumental considerations.

Though undoubtedly a major contribution, Chong (2000) also highlights the weakness of any approach which relies on values as a crucial component. Though values are conceptualized as longstanding dispositions about what considerations are most important, they are often measured with reference to current attitudes and preferences. Such an approach may be defensible as a measurement strategy, but it becomes problematic when values are then used to explain attitudes or decisions with similar properties. For example, Chong points out that measures of "racial resentment" used to explain attitudes about school desegregation bear a striking resemblance to the dependent variable they purport to explain (Chong 2000, 36). In order for values to have empirical use they must be clearly causally prior to the phenomenon being explained. They also must be sufficiently broad as to provide meaningful explanation. In the end, our explanations cannot simply be made up of values explaining other values or as attitudes labeled as values and then used to predict similar attitudes. Such thinking does little to advance our understanding of decision making.

My proposal falls in line with Chong's belief that a utility-based approach is necessary for us to gain any systematic understanding of individual decision making. Expressive motivations are extremely difficult to test empirically because a different expressive goal can always be substituted if the first one chosen fails to adequately explain the behavior in question. At the same time, the traditional assumption made by rational choice scholars (though not a part of rational choice theory) that individuals do not have meaningful differences in terms of their individual preferences is also empirically suspect. We need a way to account for individual differences that is instrumental, but also that is exogenous to the decision making we seek to explain. I believe that incorporating personality traits can provide us with the means to achieve this.

Personality Traits and Decision Making

Incorporating personality traits can provide several advantages over existing models of decision making which either ignore individual differences or focus on values as the primary source of individual variation. The first benefit that attention to personality traits can provide is that they allow us to measure meaningful individual differences in a parsimonious fashion. One of the major problems with trying to use values to explain variation is that there is no widely agreed upon universe of relevant values to draw upon. Researchers are forced to select the values they think are relevant in a somewhat ad hoc manner. This can lead to an accumulation of research that cannot be directly compared because different researchers use different values. Even more troubling is if a model of behavior is lacking, additional values can be added in order to buttress the model's explanatory power. If a whole universe of potential values is available to the researcher, the temptation (conscious or otherwise) will always be there to create a "value" that is customized to explain the behavior of interest. This leads to the tautology of values explaining values discussed earlier. Additionally, it thwarts efforts to develop cumulative scientific progress, because connections among individual values, and therefore among individual studies, would not be developed.

Personality traits do not suffer from this same limitation. Over the course of many years, trait psychologists have worked to identify a finite set of personality traits that can explain behavior. There are literally thousands of potential trait descriptors in the English language—Allport and Odbert (1936) identified nearly 18,000 trait terms in an unabridged dictionary—but not all of these represent meaningful and distinct traits. Factor analysis has been the most commonly employed technique for determining which traits "hang together" empirically. Early

work found that the bulk of meaningful personality variation could be accounted for using models of trait structure that included between 12 and 16 factors (e.g. Cattell 1943, 1944, 1956). Subsequent reexamination of this data (Fiske 1949) and later work along similar lines (Tupes 1957; Tupes and Christal 1958, 1961) found that five factors consistently explained the vast majority of the variance. For a variety of reasons this finding failed to make a significant influence until the research agenda was picked up again in the early 1980s. During this time, Goldberg (e.g. 1990, 1992, 1993) and Costa and McCrae (e.g. Costa and McCrae 1988; McCrae and Costa 1987; 2003; 2008) rediscovered the earlier findings regarding five basic personality factors. This time, the notion of five-factor models of trait structure took hold and an explosion of research building on the Big Five soon followed—more than 2000 publications on the Big Five between 1999 and 2006 according to John, Naumann, and Soto (2008). All of this drives home the point that we know which traits to study, and that any move to expand our models beyond the Big Five should be accompanied by a compelling case for the inclusion of additional traits.

In addition to being widely agreed upon, the trait dimensions of the Big Five also can be measured using relatively few items, which makes the Big Five extremely useful for survey research. Traits can be measured using either lexical survey items (as advocated by Goldberg) or using Likert-style items where respondents assess their level of agreement with various statements (e.g. McCrae and Costa's NEO-PI), with both techniques producing valid results. As with most concepts, measurement reliability is greater with more items, but scholars have found that the Big Five dimensions can be measured using as few as 1-2 items per trait (e.g. Gosling, Rentfrow, and Swann 2003; Woods and Hampson 2005; Rammstedt and John 2007; Mondak

2010). Widespread agreement at both the conceptual and empirical level makes the Big Five exceedingly valuable as a means to understand individual differences.

A third major advantage of personality traits is that they are largely exogenous to the decisions we want to explain. We can be confident of this because of a couple of related strands of research. One research agenda has examined the source of personality traits to try and determine the degree to which traits are biologically instantiated. This research (summarized more thoroughly in Chapter 2) has used twin studies, extended family studies, and adoption studies in order to parse out the relative contributions of genetics and environment on personality traits. The consistent finding from this research is that approximately 50% of the variance in personality is attributable to genetics (see Matthews and Deary 1998; McCrae and Costa 2003; or Pervin 2003 for reviews of this literature), with a few studies (Heath et al. 1992; Riemann et al. 1997; McCrae et al. 2001) suggesting a greater role for genetics.

The remaining variance can be attributed to environmental factors, but importantly, a different strand of research has found that personality traits are extremely stable in adulthood (e.g. Costa and McCrae 1988; Caspi 2000). With the exception of minor life-cycle changes as people age (Costa and McCrae 1994), personality traits change very little. The combined insight of the sizable genetic component to personality traits and the stability of those traits in adulthood mean that we can be fairly confident that traits will be influencing decision making and not the reverse. This allows us to direct our attention to the traits themselves and how those traits can shape decision making. In the next section I will briefly describe each of the Big Five trait dimensions. I will also describe how I measured these traits in my data and I will discuss how I believe the traits can be expected to influence the choices people make.

The Big Five

In my survey each trait is measured with five lexical, bipolar items. At the outset of the survey, respondents read the following introductory paragraph:

> Now we would like to ask you a few questions about yourself. The following section contains pairs of words. On a scale of zero to ten, which word best describes you? For example, on the first pair of words, the number zero means "unimaginative," the number 10 means "imaginative," and the number 5 is exactly the middle-neither unimaginative nor imaginative. On this scale, what number best represents you? You can use any number from zero to ten.

After reading that prompt, respondents gave their self-assessments on the series of 25 items. Each of the Big Five traits will play a role in shaping decision making, but their influence will likely be conditional on the details of the choice at hand. Choice situations will activate different traits depending on the specific details of the decision. In other words, not all five traits will be relevant for any given decision. Below I describe each of the Big Five trait dimensions and provide some expectations regarding when they are likely to influence decision making (for a more in-depth description of the traits see McCrae and Costa 2003; Mondak 2010).

Openness to experience. People who are high in openness to experience are more exposed to information, both incidental exposure and through their own efforts (Heinstrom 2003) and they are more exposed to culture and literature (Kraaykamp and van Eijck 2005). They also are more likely to engage in risky behaviors such as drinking and driving (Booth-Kewley and Vickers 1994). In terms of general decision making then, I would expect that choices involving the opportunity to take risks or engage in novel activities will be most likely to activate openness to experience, with individuals high in openness being more likely to take chances, try new things, and generally be open-minded when presented with those novel situations.

Extraversion. Individuals who are high in extraversion tend to be sociable, active, and outgoing. On the other side of the trait dimension, people who have low extraversion scores

(introverts) are generally quiet, shy, and introspective. Extraversion has been linked to networking behavior in the workplace (Forret and Dougherty 2001), and to the development of friendships among adolescents (Jensen-Campbell et al. 2002). It is easy to envision extraversion influencing decision making behavior. Many decisions involve choosing between social or non-social options (e.g. going it alone versus asking for help, voicing a complaint versus just living with the status quo). In these instances the possibility of social interaction is likely to serve as additional incentive for extraverts, in addition to any material benefits of a choice. At the same time introverts are unlikely to be swayed by social benefits and may even view social interaction as one of the costs in their utility calculation.

Agreeableness. This trait is associated with concern for the happiness and well being of others in social interactions. Agreeable people are described using terms such as: "warm," "generous," and "kind," and individuals high in agreeableness are risk averse (Markey et al. 2006), and successful working in groups (Barrick and Mount 1991). As with extraversion, it seems likely that agreeableness is relevant to decisions that involve social situations and interactions. I suspect that agreeable people will give greater consideration to how their decisions influence others, and they will factor the happiness of others more directly into their calculations of utility. There is also some evidence that agreeable people are more submissive or compliant to authority (Digman 1990). This suggests that agreeable people may be more likely to make "sub-optimal" choices based on their desire to please others.

Emotional stability. People who are high in emotional stability are calm, and relaxed. On the flipside, people who are low in emotional stability are nervous, easily stressed, and prone to worry. In the extant research, emotional stability has been linked with risk seeking behavior (Nicholson 2005), self-efficacy (Thoms, Moore, and Scott 1996), and satisfaction with personal

relationships (White, Hendrick, and Hendrick 2004). My expectation is that individuals low in emotional stability will seek to avoid high stress situations and that they will be willing to forgo some material benefit if they can maintain a comfortable status and avoid risk.

Conscientiousness. The final Big Five trait, conscientiousness focuses on an individual's sense of obligation, dependability and willingness to work hard. It is measured based on responses to terms like "organized," "punctual," and "industrious." Conscientiousness has been linked to honest behavior (Horn, Nelson, and Brannick 2004), risk aversion (Arthur and Graziano 1996; Kowert and Hermann 1997), and academic achievement (Wagerman and Funder 2007). More so than any of the other trait dimensions, I expect conscientiousness to be relevant to decision making across a wide variety of situations. Conscientious individuals feel a need to meet their obligations and responsibilities. This means that any decision where one choice evokes duty, responsibility or a norm of proper behavior is likely to activate conscientiousness. This will apply broadly, regardless of whether the situation is novel, social, or anxiety-inducing. In this way, conscientiousness will be influential across a number of scenarios where the other traits are simply not activated. An extravert may prefer activities that are social, and a person high in openness may like to try new things, but these are merely general preferences. For the conscientious person there is a real value at stake. Commitment to conscientiousness would seem to run deeper, entailing a deeply held attachment to hard work and meeting obligations.

Data and Results

In order to examine the effects of personality traits on decision making processes, I administered pencil-and-paper surveys to undergraduates at the University of Illinois. These students were drawn from introductory level political science courses (two sections of

Introduction to American Politics and one section of Introduction to Political Behavior) and offered extra credit in return for their cooperation. Surveys were completed during class meetings. The survey was conducted in two segments. First, respondents answered the personality survey described in the previous section and reproduced in its entirety in Appendix A. Then, one or two weeks later (depending on availability) they were administered the decision making survey, which can be found in Appendix B. The decision making survey presented respondents with hypothetical scenarios and asked them to choose between two possible courses of action. A total of 355 students completed both the personality survey and the decision making survey and they are the subjects of analysis here.

It is important to note that respondents were not aware that the two surveys were related. The students were told that they would be able to participate in research being conducted by graduate students in political science. As far as the students knew then, my two surveys were two distinct research projects. The long (1-2 week) gap between administration of the personality survey and the decision making survey provides reassurance that respondents did not have their personality responses in mind when they were answering questions about how they would make decisions in hypothetical scenarios. Also, it is impossible in this case that how respondents answered the decision making items shaped how they answered the personality questions. Thus, reverse causality can be ruled out definitively.

The first five scenarios presented respondents with subjective choices between courses of action. For these first five choices, there is no clear way to set an objective dollar value to the different choice options. However, the scenarios were written in a manner that was intended to evoke competing values. For each scenario the respondent's answer was regressed on the two personality traits I expected to have the greatest impact using binomial logistic regression.

Before proceeding with a discussion of the scenarios and my findings, it is important to note that, while most of the scenarios on the survey were not explicitly political, they encompass a number of ideas that are important to the study of political behavior, such as willingness to obey authority, feelings of self-reliance, willingness to express dissatisfaction with unsatisfactory situations, and openness to conflict. For the present study, I found it necessary to keep the scenarios simple so they could directly test decision making processes, but in the future additional layers of political complication could be incorporated into this framework.

In the first scenario respondents were supposed to imagine that they were driving on the highway late at night when they realize they have left their cell phone at a restaurant they had stopped at earlier. Their travelling companion calls the phone and finds that the restaurant manager is holding the phone for them back at the restaurant. The respondents must then decide whether to proceed to the next exit (for a total driving time of 1 hour), or to make an immediate U-turn by using a path marked "Emergency Vehicles Only." The U-Turn would save a half hour of driving, but it would mean violating a rule and taking a small (1% chance) risk that they would be caught and ticketed.

I expected conscientiousness to be most directly activated by this scenario. Individuals who are high in conscientiousness are more inclined to follow rules and obey norms of behavior, and they also tend to be more risk-averse. Therefore, I expected that individuals who were high in conscientiousness would be less likely to make the immediate, illegal U-turn. Given the risk involved, I also thought that openness to experience could be related to this decision. Individuals high in openness tend to be more risk-seeking in their behavior, so I hypothesized that openness would be positively related to making the immediate U-turn. Overall, 69% of respondents chose to make the U-turn immediately. The results for the personality traits are displayed graphically

in Figure 4.1, which shows the predicted probability that a respondent would choose to make a U-turn immediately as the trait is varied from one standard deviation below the mean to one standard deviation above. Openness had no effect on respondents' choice of whether to make the U-turn or drive on to the next exit. This is likely because the risk in this scenario was not all that great, or maybe people high in openness are willing to take risks as a means to try new things, but they're not willing to when the situation isn't particularly novel. On the other hand, conscientiousness had a strong, significant effect ($p<0.03$). As conscientiousness ranged from one standard deviation below the mean to one standard deviation above, the probability of making the immediate U-turn dropped from 0.74 to 0.60. Clearly, conscientiousness was playing an important role in shaping how respondents made this choice.

The second scenario asked respondents to imagine that they had received a speeding ticket and gave them the choice of attending a four hour driving safety course at a nearby community college, or taking a six hour online version of the course. I hypothesized that respondents' level of extraversion would be a consideration here, as the community college option involved social interaction with instructors and classmates, while the online version was inherently solitary. Given the social nature of the extravert, I hypothesized that they would gravitate towards the in-person class. Or, looked at from the other direction, introverts would jump at the opportunity to meet their obligation without having to meet and interact with a host of new people. I also speculated that individuals high in conscientiousness would be more inclined to choose community college course, both because the shorter (by two hours) time commitment would allow them to get on with their other responsibilities, and because the in-person course was likely to be the better learning experience.

Turning to the results, just under 52% of respondents chose to take the in-person course at the community college. The personality results are displayed in Figure 4.2. Extraversion did not have the expected effect, with the coefficient in the opposite direction of my hypothesis, though the result was insignificant. On the other hand, conscientiousness had a very strong ($p<0.01$) effect. Moving from low conscientiousness to high conscientiousness led to a 22 point shift in likelihood of choosing the in-person course (0.43 to 0.65).

The third scenario asked respondents to imagine they were at a school orientation program where they had to sign up for how they would spend an hour of time. The two choices they were given were "Picnic Games," which explicitly included games like badminton, lawn bowling, bag toss, and flag football. The other alternative was to sign up for "Mystery Games." My expectation was that openness to experience would be positively associated with choosing "Mystery Games," as they implied the possibility of a novel experience. I also expected extraversion to be associated with choosing "Picnic Games" because all of the games listed were social and group-based, and would allow for a great deal of interaction. "Mystery Games" for all the respondent knew could have involved games played alone. Judging from the overall results, the picnic games discussed in the prompt are very popular (at least among college students) because over two thirds of the respondents chose "Picnic Games." Results for the personality traits are displayed in Figure 4.3. The openness to experience effect is in the expected direction, but it is not significant ($p<0.20$). The effect for extraversion, however, does reach an acceptable level of significance for a sample this small ($p<0.06$). Individuals who were low in extraversion had a 0.38 probability of selecting "Mystery Games." This low likelihood dropped ten points (to 0.28) for high extraversion individuals.

The fourth scenario had respondents imagine they were working on a class research project with another student who did poor quality work that would have ensured a poor grade for the respondent. Respondents also knew that any attempt to force improvement from the partner would lead to an argument. The choice then was between confronting the partner and forcing him to improve his work or the respondents could choose to just do the revisions themselves. Overall, respondents were fairly evenly split on the question, with 53% deciding to confront the student. I expected that respondents high in agreeableness would be more likely to choose to fix the report themselves and avoid the argument, while extraverted individuals would be more likely to be willing to confront the student. The results are displayed in Figure 4.4, but there is not much of a story to be told. Both the agreeableness and extraversion coefficients were in the correct direction, but only extraversion even approached conventional levels of significance ($p<0.16$). It also occurred to me that conscientiousness could be related to this decision, although it was unclear to me in which direction conscientiousness should be expected to work. On the one hand, conscientiousness has been associated with academic achievement, and also with job performance. Seen through this light, I might have expected high levels of conscientiousness to be associated with avoiding the fight and simply fixing the report alone (the surest way to good performance). On the other hand, individuals high in conscientiousness value rules and personal responsibility. They might have been particularly galled by propping up the shoddy work of a classmate and been more rigid about making the other student finish. With these uncertain expectations in mind, I performed a supplemental analysis that included conscientiousness. The coefficient suggested that conscientious respondents were more likely to finish the report themselves, but as with the other two traits, the result was insignificant.

Scenario five asked respondents to imagine a future where they were successful lawyers given the opportunity to be appointed to a judgeship. In the scenario, the governor gave them the choice between appointment as a criminal court judge, a position that would entail a great deal of stress, and a position as a judge on small-claims court. The small-claims court position would entail less stress (i.e. no life or death-type decisions), but would also be somewhat boring. My expectation was that individuals high in emotional stability would be more likely to choose criminal court. Neurotic individuals (those low in emotional stability) would seem likely to be uncomfortable with the kind of angst that would be associated with sentencing people to life in prison. I also expected that openness to experience would be associated with choosing criminal court. The stimulation that would come from being involved in criminal trials would seem likely to be powerfully felt by those high in openness, just as the boredom of small-claims court could repel them. Overall, more than two thirds of respondents chose criminal court. The personality results displayed in Figure 4.5 show that both emotional stability ($p<0.04$) and openness to experience ($p<0.02$) play important roles in shaping the choice. As emotional stability rises from low to high, the probability of choosing small-claims court drops from 0.38 to 0.26. Openness shows a similar effect, dropping the probability of choosing small-claims court from 0.39 to 0.25.

These first five scenarios demonstrate that personality traits influence how people make decisions. Of the Big Five, only agreeableness did not have a significant effect on how respondents chose. One important point to note is that, while a variety of traits influenced decision making, which traits were significant varied widely across the different types of decisions. This reinforces the broader notion that the influence of personality traits is best

studied in conjunction with consideration of the environmental circumstances surrounding the choice.

However, establishing that personality traits influence decision making behavior on totally subjective choices represents an easy test. The idea that long-standing dispositions will influence behavior is both intuitive, and well-supported by the literature discussed above. For the next set of scenarios, I put personality traits to a stiffer test by examining their influence on a series of scenarios in which economic considerations are made explicit. In each of the following scenarios there was an explicit, expected dollar value for each choice and that expected value was varied so that a random half of respondents received one configuration of expected values, and the other half had a different configuration. If personality traits matter, even in the face of a clear, "best" choice in terms of dollars and cents, it would have important implications for the study of rational decision making. This is not to say that I am attempting to identify the traits most associated with rational decisions and irrational decisions. My contention is that the considerations that are important to a person differ across personality traits. For an extreme introvert, avoiding social interaction may be worth accepting a lower monetary payout. For an extremely open individual, the chance to try something new and exciting could trump a greater dollar reward for something typical and boring. We have long recognized that individuals differ in their preferences, but personality traits provide us with an opportunity to study the sources of these preferences systematically. In addition to the hypotheses discussed below, here it is important to reiterate my expectation that conscientiousness will be of special relevance. When money is at stake, a general preference for social situations or novel experiences may take a back seat for the extravert and the open individual respectively, but I expect that the conscientious

individual will be much more reluctant to deviate from their values regardless of the economic incentive.

The first scenario asked respondents to imagine that their community was considering implementing a new tax to which they were opposed. By expressing opposition to the tax they may be able to convince the city council to reject the tax. The respondents' choice was in how they would express their opposition, either by attending and speaking at a council meeting, or by writing a letter to the council. For half of the sample, the expected value of speaking at the city council meeting was higher than the expected value of writing a letter. For this half of the sample, the expected value of speaking at the meeting was a loss of $720, while the expected value of writing a letter was a loss of $900. Not surprisingly, given this discrepancy, most respondents decided to speak at the meeting (around 80%). For the other half of the sample, the values were reversed, so that writing a letter had an expected loss of only $720 and speaking had an expected loss of $900. Here again, most respondents made the economically "better" choice, with 75% choosing to write the letter.

Obviously, the monetary payout was playing a major role in which method of contact was chosen. However, a substantial subset (20% in Version 1 and 25% in Version 2) of respondents chose the method with the lower payout. Why might this be the case? Traditional accounts might dismiss the behavior of these individuals as irrational, or suggest that they did not grasp which choice had the higher expected value. A personality approach, however, can provide us with an alternative view of what constitutes rational behavior in this instance. Perhaps for an extraverted individual, the expressive benefits that come from speaking out at a meeting are worth a lower monetary payoff. Or, viewed from another direction, perhaps the introvert is willing to accept a lower expected dollar value for the psychic comfort of not having

to stand in front of a crowd of people to voice his opinion. Using a similar logic, it is easy to imagine that agreeable individuals might prefer to express their displeasure in writing in order to avoid any direct confrontation.

To test these hypotheses, I ran logit models identical in form to the ones used for the first five scenarios except that these models included a variable indicating which version of the question the respondent received in addition to the two personality traits. As a reference, Figure 4.6 shows the likelihood that an average respondent (mean values for extraversion and agreeableness) would choose to write the letter. The only thing varying from the first bar to the second is whether they received Version 1 (higher payoff for speaking) or Version 2 (higher payoff for writing a letter). As noted above, the economic payoff was a major factor in decision making as we would expect. The probability of writing the letter rises from 0.19 when it pays less to 0.75 when it pays more.

I had no expectation that the personality traits would trump the economic outcome. Instead, I expected that extraversion and agreeableness would moderate the effect of the monetary payoff. That is exactly what the results in Figure 4.7 show. The extraversion coefficient was highly significant ($p<0.03$) and the agreeableness coefficient was right at the cusp of significance ($p=0.102$). As extraversion rose from one standard deviation below the mean to one standard deviation above, the probability of writing a letter dropped from 0.24 to 0.15 for Version 1 and from 0.80 to 0.69 for Version 2. Agreeableness showed the opposite pattern, rising from 0.16 to 0.23 for Version 1 and 0.71 to 0.79 for Version 2.

In the second scenario, Version 1, asked respondents to imagine they were out to lunch with two food options: for $12 they can get conventional, but unspectacular fast food, or for $8 they can try a restaurant that serves Tibetan food (which they have never tasted before). Version

2 was identical, except that fast food was $8 and Tibetan food was $12. I expected that high levels of openness to experience would be related to choosing Tibetan food. Conscientiousness, on the other hand, has been found to be related to traditionalism so I also hypothesized a negative relationship between conscientiousness and the novel food option. Turning to the results in Figure 4.8, the version had a significant impact on which food respondents chose. The probability of choosing Tibetan food dropped from 0.54 when it was $8, to 0.25 when the price was $12. Examining the personality results in Figure 4.9, the openness coefficient was in the expected direction but not significant. The conscientiousness coefficient, on the other hand, was highly significant ($p<0.004$). As conscientiousness rose from low to high, the probability of choosing Tibetan food dropped from 0.63 to 0.41 for Version 1 and from 0.32 to 0.16 for Version 2.

In the third scenario, respondents were asked to imagine that they were boarding a plane for a two hour flight. As they entered the plane a flight attendant asked them if they would be willing to change seats with another passenger in exchange for a voucher. The new seat would be between a crying child and a person the flight attendant described as a "nervous flyer." In Version 1, the voucher was for $300, while in Version 2 it was $100. I expected agreeableness to be positively related to changing seats because people high in this trait would be more inclined to try to accommodate requests and less willing to refuse. I also expected that conscientiousness would be negatively related to changing seats. Conscientiousness individuals value order, and tend to be somewhat inflexible; thus I expected that they would be less inclined to give up the seat they had bought and paid for.

For this scenario, taking the voucher and changing seats is always the right thing to do from a dollars and cents perspective. The difference in version only alters the magnitude of the

financial incentive. This was reflected in the decision making of the respondents displayed in Figure 4.10. With the $300 voucher, the probability of an average (mean values on conscientiousness and agreeableness) person choosing to change seats was 0.85. For the half of the sample that was offered a $100 voucher, the probability of switching seats was 0.70. Turning to the personality results displayed in Figure 4.11, agreeableness was positively related to taking the voucher ($p<0.08$), with the probability of switching seats rising from 0.81 to 0.88 for Version 1 and 0.65 to 0.76 as agreeableness moved from low to high. Conscientiousness had an even stronger ($p<0.007$) negative effect. As conscientiousness moved from low to high, the probability of switching seats dropped from 0.90 to 0.76 for Version 1 ($300 voucher) and from 0.78 to 0.56 for Version 2 ($100 voucher).

The fourth scenario asked respondents to imagine they were driving to a concert when they witnessed an automobile accident. They were the only witness to the incident, and they can attest to the fault of one of the drivers, but nobody saw that they witnessed the accident. The choice put to the respondents was whether to wait at the scene and tell the police what happened and miss the first half of the concert, or just to leave and go on to the concert immediately. The price paid for the concert ticket was varied across versions, $90 in Version 1 and $45 in Version 2. I expected conscientiousness to be the personality trait most relevant to this decision. A conscientious individual would be more likely to feel a sense of obligation to stay and provide a report to the police. I also expected that extraversion would play a part, with more extraverted individuals being more willing to shrug off the situation and go straight to the concert.

In this case, the monetary value of the concert ticket played no role in decision making. As shown in Figure 4.12, approximately two thirds of respondents chose to go straight to the concert without waiting for the police, regardless of whether the ticket cost them $45 or $90.

With regards to the personality results, displayed in Figure 4.13, the extraversion coefficient was in the predicted direction, but it was not significant. On the other hand, conscientiousness again showed a strong ($p<0.02$) effect. The effect is virtually identical across the two versions, with the probability of going straight to the concert dropping from 0.74 to 0.58 for the $45 ticket as conscientiousness ranged from low to high, and from 0.72 to 0.55 for the $90 ticket.

For the final scenario, respondents were to imagine that they were on a game show where they had to carry out certain tasks to earn prize money. The object of the game was to obtain a hotel room from a hotel that had given away the respondent's original room. The respondents can either adopt a "sweet" approach, by being polite and friendly as they ask for accommodation, or they can be "sour" by taking an angry and confrontational approach. Each approach carried different probabilities of succeeding and different prize money payoffs. For Version 1 respondents, the expected value of a sweet approach was $1400 and the expected value of a sour approach was $900. For Version 2 respondents, these values were reversed. My primary expectation was that individuals who were high in agreeableness would be less responsive to the expected payout and generally unwilling to adopt a sour strategy. These individuals are uncomfortable with conflict, and would struggle to be combative, even when it was economically beneficial. I also expected that individuals high in openness to experience might be more willing to adopt a sour approach. This is not because such individuals are disagreeable, but merely that they would be willing to try playacting the part of an angry customer as a novel and possibly fun experience.

Interestingly, as Figure 4.14 demonstrates, the version had no significant effect on how respondents made the choice. The probability of choosing a sour strategy was slightly higher when the sweet strategy had the higher expected value than it was when sour was the

economically shrewd choice (0.41 to 0.38). In this case, it is possible that the respondents had difficulty figuring out which choice had the larger expected payout. Be that as it may, we can still investigate whether personality traits conditioned respondents' decisions, and Figure 4.15 presents the personality results.

The coefficient for openness to experience was in the expected direction, but the effect was not significant. However, the agreeableness effect was sizeable ($p<0.001$). For Version 1, as agreeableness rose from low to high, the probability of choosing a sour strategy dropped from 0.52 to 0.31. A similar drop (0.48 to 0.28) was in evidence for respondents who received Version 2. Thus, regardless of the financial incentives, agreeable people are substantially less likely to behave in a confrontational manner, even when it is all an act. Whether this is rational or not depends on how one conceives of rationality. From a strictly financial perspective, the agreeable person is being irrational. But if we consider the psychic pain brought on by confrontation and conflict as part of their utility calculation, their decisions make much more sense. This is not to argue for post hoc justifications for all decisions as rational. Instead, individual personality traits provide us with a set of factors that shape decision making, but that are exogenous to the decisions themselves. In this way, we can account for differences in tastes systematically without resorting to the circular logic of values as explanations for choices.

Conclusion

Across the ten decision making scenarios described here, I found evidence that personality traits influence all kinds of choices. Each of the Big Five was relevant for at least one decision, and conscientiousness was a significant factor in five scenarios. This lends support to the earlier supposition that conscientiousness would be a particularly important trait for

decision making because of the way it structures what people value to a great extent. In the future, as the link between personality traits and decision making is further explored, conscientiousness will bear closer examination.

There are a number of ways that this work can be extended that are likely to be fruitful. First, and most obviously, additional measures should be tested and compared. This work has been largely exploratory, meaning there was little past work on which to build when it came to constructing suitable choice scenarios. I tried to create situations that clearly set values (broadly construed) in conflict, both with each other and with financial payoffs. Overall, I am pleased by the fact that many of the results are highly intuitive. However, there were several relationships that I expected to find that did not materialize. For example, openness was not related to trying novel food or picking mystery games. The possible explanations for these non-findings cannot be tested at this point, but my hope is that if more scholars take up the challenge, we can gain a better understanding for the mechanisms involved.

Once we have stronger ideas about how personality traits affect general decision making, we can start to add additional layers of political complexity. Only one of the scenarios I presented here had explicit political content and that was a deliberate choice. Political content carries with it a number of potentially confounding features: ideology, partisan identification, political interest, and knowledge all might interact with how personality traits influence judgment. As we learn more about the role played by traits, the interactions between traits and various political variables will need to be disentangled.

A final useful avenue of future research would be to test decision making more formally by examining how personality traits affect play in economic games such as the dictator game, the ultimatum game, and the trust game. In each of these cases, the conditions could be varied to

activate certain traits into the decision making calculus. For example, recent work in behavioral economics has shown that meeting fellow players face-to-face before play increases generosity. It seems very likely that such a relationship would be moderated by agreeableness and extraversion. There are a number of other subtle manipulations that could be used to test the relationships between personality traits and economic decision making.

The essential message of this chapter is that as we consider utility as a model for understanding decision making, we can incorporate individual level preferences. In the past, incorporating the individual was often seen as an unnecessary complication. Better just to assume some generally true rule about utility maximizing behavior and leave it at that. But we can incorporate individual level preferences, and we can do so without resorting to tautological relationships connecting values with values. Personality traits are not a panacea, and obviously when individuals are considered, there will always be idiosyncrasies, but we can, and should, do all we can to enrich the concept of subjective utility.

In this chapter I have demonstrated that decisions which go against economic utility are not necessarily irrational. When we account for the essential dispositional characteristics of individuals, we see that other considerations are often considered alongside economic utility. When a choice that entails public speaking extraverts sought out the opportunity, even when less money was available, and introverts were willing to forgo greater monetary gain in order to avoid such an experience. It is difficult to conceive of either mindset as irrational when the respondent is making a choice that comports well with the psychological needs associated with their disposition. Rational choice research has generally been reluctant to embrace this type of thinking because the concept of utility ceases to be useful if the pursuit of individual tastes renders all decisions rational. However, personality traits offer a means to systematically

account for the psychological basis of decision making. They provide a stable, biologically-rooted source of preferences that can be incorporated into models of utility.

These findings should encourage scholars of personality to broaden their view of how personality traits influence behavior. Up to this point, most research on the role of traits has been narrowly focused on establishing that they matter. My results suggest that, not only do traits matter, but they exert an influence even when accounting for economic utility. This represents a truly stern test for the influence of personality traits, and the fact that traits continue to matter even when economic utility is factored in should give us confidence about the importance of individual psychological dispositions. It is past time to move beyond research that seeks to determine if traits matter. They do. We should now turn our attention to understanding the conditions under which they matter most. The results of this chapter represent an early step in this process. The innate dispositions of my respondents condition their choices, but which traits were relevant was heavily dependent on the nature of the environmental stimuli. We must know something about the characteristics of the people being studied as well as the circumstances in which they find themselves if we truly want to understand the choices they make.

Chapter Five: Personality in Context

Personality traits matter. Our traits are rooted in genetics, and they exert substantial influence on a wide variety of behaviors. Even more importantly, traits influence behavior by interacting with the world around us. We select into environments based in part on our personality characteristics and our environments influence us differently depending on the traits we possess. Given the strength of personality effects that have been demonstrated here and in recent research, a natural questions arises: what took us so long? Why are we only now at the point where personality traits are being integrated into larger models of behavior?

At the outset of this dissertation I noted that there is a strong intuitive appeal to the use of personality traits in explaining behavior. We come to terms with the world around us by recognizing patterns of thought and behavior, both in ourselves and in the people around us. As we learn more about a person we can better predict how they will respond in a given situation. If one of our friends exhibits calm, even under stressful situations, we will begin to think of them as a "calm person." We might be more inclined to seek help from our calm friends in moments of crisis, knowing that they will be more reliable than a friend who folds under pressure.

But what happens when our calm friend loses her cool in a stressful situation? Does one incident of incongruent behavior undermine our classification? For most people the clear answer to this question is no. We can recognize that a calm person will occasionally get nervous, or overreact to a situation without our entire understanding of that person's character being thrown into disarray. One instance will be unlikely to shake our conviction that we understand our friend's temperament. On the other hand, a series of nervous reactions from our "calm" friend might lead us to reevaluate our assessment. We may come to the conclusion that our earlier assessment had been wrong, or we could speculate that our friend has changed. In some ways,

our intuitive judgment can resemble an inductive scientific process: data are collected and analyzed, hypotheses are drawn, new data are collected, and hypotheses are reevaluated as necessary.

As social scientists we value intuitive appeal, and we know that a certain measure of faced validity is important. However, intuition can only take us so far. The scenario described above illustrates both the strengths and weaknesses of human intuition. It is rather remarkable that we can evaluate our friends along numerous dispositional dimensions, and that we use and adjust these assessments on a daily basis. On the other hand, intuition often falls prey to an assortment of biases that can undermine the whole endeavor. Selective attention, motivated reasoning, primacy bias, recency bias, attribution bias and a host of other potential biases make it difficult for us to trust any of our perceptions. This leaves us with an interesting dilemma because intuition tells us that dispositional traits matter. But can we trust our assessments of other people's traits? Can we trust our self-assessments, or are we merely representing ourselves the way we want to be seen?

Over the last seventy years or so, these questions have largely been answered. This pace may seem slow, but personality researchers could not just trust their intuition. Personality scholars had to find the relevant trait dimensions, establish valid and reliable measures, confirm the validity of self-reports, determine the stability of trait responses over time, ascertain the cross-situational stability of trait responses, and examine the cross-cultural replication of personality constructs. Each task in this list was a daunting research agenda, and the development of the Big Five is rich in triumphs and setbacks.

In developing a framework for understanding political behavior that accounts for individual differences I am standing on the shoulders of all of the scholars who have developed

and refined our conception of personality traits. The Big Five is unlikely to be the endpoint of personality research, but it represents the first point at which we have been able to conceptualize personality in a manner that political behavior scholars can use. We should jump at the chance to do so because an incorporation of personality traits can help us to address some of the weaknesses in our field. In this dissertation I have laid out a framework for incorporating personality into our existing models of political behavior. This framework suggests clear paths for future research while also remaining flexible enough to be adapted to different research agendas.

Personality in Context

What does it mean when we identify a "personality effect"? Over the last few years, a number of articles have been published that demonstrate "direct" effects of personality traits on political variables of interest. Despite demonstration of such effects, personality does not seem to have gained much of a foothold in mainstream political behavior work. One reason for this might be that, in the absence of context, a personality effect is difficult to understand or apply. A direct effect implies something static or absolute. It suggests a relationship that is inherently not dynamic and thus, for many people, not interesting. What I have attempted to show over the last three chapters is that personality traits themselves are stable, and that stability allows us to better understand a political world that is constantly in flux.

To illustrate this, consider again the figure I presented in Chapter One (Figure 1.1) and recall that each of the bold lines in the figure represent a key path in understanding the role personality traits play in shaping political behavior. A study of the direct effects of personality traits on political behavior would be using a model that drew a straight line between traits and

behavior. In this "framework," the personality traits are simply disembodied causal forces which constantly operate to influence political behavior. We have no means of understanding how traits are formed, and the environment is inconsequential. To be clear, as far as I am aware no personality scholar is proposing such a simplified model, and most scholars who test direct effects for traits are likely to be open to the idea that there is more to the story. Sometimes data limitations restrict testing to direct effects, but that does not mean we should keep our theorizing at that simplistic level.

A similar simplifying exercise can be used to illustrate the larger need for contextual thinking in political behavior research. Different research agendas capture aspects of Figure 1.1, but they also leave large areas unspecified. One of the major criticisms of traditional political behavior research that has been leveled by biology and politics scholars is that the traditional work is guilty of environmental determinism. Direct effects of environmental stimuli are tested with no accounting for biological variation that seems to play an important role. At the same time, though their theorizing has been clear that both genes and the environment matter, biology and politics research using twin studies has generally been unable to explain the mechanisms through which genes affect behavior.

In Chapter Two I made use of a rich twin dataset which contained an unprecedented set of political variables as well as an extensive Big Five battery. Using this data I was able to estimate the degree to which correlations between traits and political variables were genetically heritable. A substantial amount of the variance shared between traits and political behavior was heritable. These findings comport well with a theory of influence in which personality traits act as a mediator between genes and politics. The link between genes and politics is complex, and personality traits are only of the explanation, but they are a significant part to be sure.

In Chapter Three I sought to illuminate the interaction between traits and environmental factors as they apply to political behavior. Personality traits play an important role in shaping political discussion behavior, but that role is subtle and conditional. Extraverts are more likely to engage in politics, but only when that engagement is social in nature. Openness to experience and extraversion are both related to frequency of political discussion and the size of respondents' social networks, but conscientiousness and emotional stability also influence discussion behavior in subtle ways. Agreeableness inhibits exposure to cross-cutting views and individuals high in openness to experience are more readily persuaded by their discussion partners.

Chapter Four showed how different environmental circumstances could trigger different personality traits, and the preferences and values that accompany those traits. When choices highlighted a sense of responsibility, duty, or obligation, conscientious individuals were more likely to do what they thought was the "right thing" even when that meant sacrificing monetary gain. Similarly, introverted people were reluctant to stand up in front of a crowd for a greater economic payoff, but they would happily take action that did not require them to be placed in a psychologically uncomfortable situation. The environment in these scenarios activates considerations that differ based on the personality characteristics of the individual.

Taken together, my goal has been to show that personality traits are stable, biologically-based dispositions. We can use these dispositions to form a better understanding of heterogeneous environmental effects. People experience the political world differently. A get-out-the-vote strategy that works on me might do nothing to sway my friend. Negative advertising might turn my friend off, but it could stimulate my interest. The notion that our environment will affect us differently depending on our traits is a simple and intuitive one, but it is built on a solid theoretical foundation that goes far beyond simple intuition.

Moving Forward

The Big Five has emerged as a highly influential personality trait taxonomy in psychology over the last twenty five years, and with political scientists beginning to incorporate personality into their research designs, the opportunity is there to make significant advances in our knowledge. At the same time, we must be cautious as we proceed, and mindful of what could go wrong. Psychologists were studying trait taxonomies that closely resembled the Big Five long before Costa, McCrae, and Goldberg brought their models into the mainstream. Research stalled because scholars became entrenched in their ideas and unwilling to maintain dialogue with those who disagreed with them. It would be unfortunate if personality research in political science fell into the same trap. We should recognize that the Big Five may be more helpful in some fields than in others, and that knowing when personality does not matter can be just as informative as understanding when it does.

Another possibility is that political scientists may find that a narrower view of traits is useful for some questions. For example, the concepts of need for cognition and need to evaluate both made their marks in political science before the Big Five. It may be that in a broad sense, these psychological predispositions do not qualify as "traits" and they may even be encompassed by one or more Big Five traits, but that does not mean there is not a place for them in our understanding of political behavior. I see no reason for rigid adherence to the Big Five if there are instances where application of an alternate framework can help us to produce greater insight regarding the substantive matter in question. However, the Big Five should be our starting point, and more specific indicators of personality should be situated within a Big Five framework before they are used widely. We need to have a common understanding of personality if

researchers are to communicate readily, and, at present, the Big Five seems to be the best candidate for such an understanding.

The contributions I have outlined in the previous chapters advance our understanding of political behavior in several important ways, but there are other advances that also will be important. A scholar could construct a research agenda from an exploration of the various sub-facets of the Big Five. As we learn more about which trait effects appear consistently, and which do not, the ability to move to the facet level could prove valuable. For example, we could start from a question such as: what is it about openness to experience that leads to greater political participation? An examination of the facets of openness could help us to understand on a more basic level which aspects of the trait are driving the relationship. Is it the attraction to ideas? Or perhaps the drive to be placed in novel situations is the strongest part of the relationship. Examining traits at the facet level has the potential to improve our theorizing because we can be even more specific about the mechanisms most relevant to the question of interest.

Another way that the facets of the Big Five could prove to be useful is in helping to clarify inconsistent findings at the trait level. For example, openness to experience and conscientiousness are consistently found to be associated with liberal and conservative ideologies, respectively. At the same time, extraversion is generally not found to be associated with either ideological pole. Agreeableness and emotional stability have been much less consistent in terms of their relationship with ideology. Some studies find relationships suggesting that agreeableness is associated with liberalism. Some studies find relationships suggesting that emotional stability is associated with conservatism. But just as many studies find no relationship at all. One possible explanation for this inconsistency is that different facets of the traits are moving in opposite directions. Hirsh et al. (2010) present evidence suggesting that

one aspect of agreeableness, "compassion," was associated with liberalism, while another, "politeness" was associated with conservatism. If this is the case, mixed findings for agreeableness are much easier to understand and interpret.

Going too far down this road is dangerous because we do not want to become bogged down in debates over the relative importance of sub-scales within a trait dimension. The facets of the Big Five can be useful if deployed for theoretically sound purposes, but it should be kept in mind that the Big Five were derived empirically, and a five factor model represents a more accurate description of individual difference than the thirty trait structure that would be implied by treating the facets as totally distinct. At all times we will have to strike a balance between the greater precision that is available to us and the parsimony provided by the Big Five. Any move towards precision should be made based on sound theoretical expectations.

Utilizing the Big Five in comparative research also has the potential to lead to a number of important advances. As evidence for the cross-cultural similarity of trait structure continues to accumulate, we can begin to leverage this similarity across different political contexts. In examining the effects of personality traits in different countries, we should expect to see broad similarities to the degree that politics is similar from country to country. Extraversion, as an example, should positively predict political activity in most democratic countries, because the connection between sociability and political engagement would seem to be fairly constant across contexts. With broad similarities established, the next step would be to try and theorize about how personality effects might manifest differently depending on the political context. For example, perhaps the link between openness and political engagement is weaker in systems with traditional one-party dominance because politics in those contexts does not provide opportunities for engagement with new ideas.

In addition to the broad directions suggested above, each of the three empirical chapters here could be extended in meaningful ways, and I hope to be able to carry out these extensions soon. For the short term, the most pressing need in research on the heritability of personality and politics is replication of the findings reported in Chapter Two. This is especially important considering that my data has limitations relating to the reliability of some of the personality traits. Fortunately, this problem should be rectified shortly. A replication will be possible using data collected from Danish twins, hopefully by the end of 2011. The Danish dataset will have a much larger sample size, which will help to ensure the reliability of the personality measures. By collaborating with scholars from the University of Southern Denmark, I hope to be able to obtain much stronger empirical support for the findings in Chapter Two.

The study of political discussion in recent years has become focused on questions surrounding disagreement. In general, people talk with those who are most like them (McPherson et al. 2001), and thus, exposure to disagreement is the exception not the rule. This pattern holds true for politics (Mutz 2006, but see Huckfeldt, Johnson, and Sprague 2002). A lack of exposure to cross-cutting views is problematic because exposure to disagreement has been linked to a number of positive consequences including greater understanding of the larger issue environment (Huckfeldt and Sprague 1995), higher levels of tolerance (Mutz 2002), and better understanding of the rationales supporting opposing viewpoints (Barabas 2004). On the other hand, Mutz (2006) also has shown that exposure to disagreement can lead to lower levels of political participation.

In Chapter Three, I discussed how extraversion and agreeableness conditioned the impact of network size on exposure to disagreement and that high levels of openness to experience were associated with greater discussion partner influence. This work could be extended in several

ways to further strengthen our understanding of the importance of disagreement. One possibility is that the nature of disagreement varies based on personality traits, and this variation, in turn, is likely to be important for the kinds of effects of disagreement we observe. Some people are likely to really enjoy disagreements and engage in them readily and recreationally. For others, disagreements are likely to be intense, confrontational experiences. It is easy to imagine that the kind of disagreement will be important in determining the consequences of that cross-cutting discussion. An angry debate is likely to produce different consequences when compared to friendly banter, but political scientists have generally not measured the nature of the disagreement with this kind of precision. The personalities of the participants are likely to moderate several aspects of this dynamic, including the frequency of disagreement, the nature of the dispute, and effects that result from different types of disagreements.

Along similar lines, the findings in Chapter Three provide insights into the personality of an individual likely to be persuaded. Chapter Three also provided evidence that individuals who were more open to experience and more neurotic were more likely to try and persuade others. However, we know little about which personality traits are associated with the individual who is actually successful in persuading their discussion partner. The best data for addressing this issue would have information on both conversation partners, which would require a snowball sample. With such data, we could learn who is more likely to be successful at persuading their discussion partner. We could also learn if certain personality traits were associated with overconfidence in thinking they had persuaded their discussion partner when in truth they had not been effective. In collaboration with Paul Testa and Melinda Ritchie, I hope to have a pilot survey administered to University of Illinois undergraduates this fall. Our goal is then to use the results of the pilot

study to seek funding for a full survey that could be administered to a more representative sample of the population.

Finally, I hope to extend the findings of Chapter Four by moving to a more formalized experimental test of differing conceptions of utility. One way to do this is to analyze how variation in personality traits affects the way people play economic games. I expect that people will play differently depending on their personality traits, and I expect that subtle manipulations in the way the game is set up will affect people with different traits in predictable ways. At the moment, I envision having subjects play variations on dictator, ultimatum, and trust games. There is already some limited evidence to suggest that two traits, agreeableness and extraversion, play an important role in determining the extent of cooperative behavior, with agreeableness being positively related to cooperation and extraversion negatively related (Koole et a. 2001; Ben-Ner et al. 2008) In the dictator game, Player 1 has $10. Player 1 can choose to send some amount to Player 2 and keep whatever they do not send. Player 2 has no action. The ultimatum game is the same as the dictator game, except Player 2 can choose to accept Player 1's offer, or Player 2 can choose to void the deal in which case both players receive $0. In the trust game, Player 1 can choose to keep $10 or send some amount of it to Player 2. Whatever money is sent to Player 2 triples, and then Player 2 can decide what to do with the money. Player 2 is under no obligation to send any of the money back to Player 1, hence the name of the game.

People who play these games consistently defy the predictions of classic economic theories. In the ultimatum game for example, the modal decision is to offer a 50-50 split of the money, even though the "rational" action would be to keep $9 and give only $1. When people do make "unfair" offers like this ($8-$2, or $9-$1) a significant portion of subjects reject these offers, even though they would still be benefiting by accepting. All of this suggests that for

many people, there is more to utility than what yields the most money. I think personality traits could be helpful in explaining variation in how people play these games. Further, I believe we can learn more about how people make utility judgments by manipulating the decision-making conditions. For example, the decision of an extravert might be very different if he has met the person with whom he is playing.

Testing individual variation in perceptions of utility using this framework would seem to complement the approach I utilized in Chapter Four. Economic games lack some measure of realism, as people are very rarely placed in situations where they are forced to distribute money under such rigid conditions. On the other hand, the scenarios used in Chapter Four were meant to feel like real decisions that people faced in their day-to-day lives. What the economic games lack in realism, they make up for in internal validity as the experimenter has total control over any manipulations in how the game is played. Taken together, these two research strategies can provide a framework for understanding how personality traits shape evaluations of utility. My hope is that this work will help bring proponents and opponents of rational choice into a compromise of sorts. Rational choice scholars are correct when they assert that utility maximization is a useful model that can in certain circumstances closely approximate real world behavior. Similarly, critics of rational choice are correct in pointing out the limitations of such an approach, and the empirical irregularities left unexplained. Instead of repeating the same debates *ad nauseum*, we should be seeking a better understanding of how people conceptualize personal utility and how variation in these conceptions influences decision-making. An approach that incorporates personality traits could provide us with some real insights.

I believe the course that I have advocated will help push the goals of personality research beyond simply showing that personality matters. Establishing the links between the heritability

of personality and political participation should have an impact in providing us a mechanism through which genes influence political behavior. Incorporating predispositions into our studies of social interaction provides us a richer picture of how people respond differently to the political environment in which they live. And systematic influences of personality traits on perceptions of utility help to provide us with a rational choice framework that appeals to psychologists as well as economists. All of these are exciting steps forward, and I hope they make a significant contribution, not just with what I have found, but by suggesting fruitful new avenues of study.

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Tables

Table 2.1

	rMZ (p value)	n	rDZ (p value)	n	A (95% CI)	C (95% CI)	E (95% CI)
Openness to Experience	0.51 (<0.001)	351	0.11 (0.10)	234	0.49 (0.40-0.57)	0 (0-0)	0.51 (0.43-0.60)
Conscientiousness	0.25 (<0.001)	351	0.11 (0.07)	234	0.25 (0.07-0.37)	0 (0-0.08)	0.75 (0.65-0.85)
Extraversion	0.51 (<0.001)	351	0.17 (<0.001)	234	0.50 (0.40-0.57)	0 (0-0.22)	0.50 (0.42-0.59)
Agreeableness	0.23 (<0.001)	350	0.06 (0.44)	234	0.22 (0.02-0.33)	0 (0-0.24)	0.78 (0.68-0.87)
Neuroticism	0.40 (<0.001)	351	0.15 (0.02)	234	0.39 (0.29-0.49)	0 (0-0)	0.61 (0.51-0.71)

Table 2.2

	rMZ (p value)	n	rDZ (p value)	n	A (95% CI)	C (95% CI)	E (95% CI)
Vote in Past Presidential Elections	0.52 (<0.001)	356	0.32 (<0.001)	239	0.39 (0.06-0.61)	0.12 (0-0.38)	0.48 (0.37-0.60)
Political Interest	0.39 (<0.001)	356	0.22 (0.002)	239	0.35 (0.08-0.48)	0.04 (0-0.32)	0.61 (0.51-0.70)
Political Knowledge	0.53 (<0.001)	356	0.21 (0.002)	240	0.52 (0.42-0.60)	0 (0-0.41)	0.48 (0.40-0.56)
Discuss Politics with Others	0.36 (<0.001)	356	0.20 (0.003)	239	0.32 (0.06-0.45)	0.03 (0-0.28)	0.64 (0.54-0.73)
Discuss Politics with People who Disagree	0.28 (<0.001)	356	0.08 (0.25)	239	0.26 (0.16-0.36)	0 (0-0)	0.74 (0.65-0.83)
Member of a Political Group	0.49 (<0.001)	356	0.34 (0.003)	239	0.32 (0-0.60)	0.18 (0-0.48)	0.51 (0.36-0.67)
Member of a Community Group	0.45 (<0.001)	356	0.27 (0.003)	239	0.36 (0-0.55)	0.09 (0-0.39)	0.55 (0.43-0.66)
Attend a Rally	0.50 (<0.001)	356	0.37 (<0.001)	239	0.27 (0-0.58)	0.23 (0-0.50)	0.50 (0.38-0.62)
Work in a Campaign	0.48 (<0.001)	356	0.14 (0.29)	239	0.46 (0.22-0.64)	0 (0-0)	0.54 (0.39-0.71)
Contribute Money	0.54 (<0.001)	356	0.20 (0.06)	239	0.53 (0.33-0.66)	0 (0-0.40)	0.47 (0.35-0.60)
Held Office	0.53 (<0.001)	356	-0.01 (0.98)	239	0.46 (0.04-0.67)	0 (0-0.12)	0.54 (0.33-0.92)
Contacted Official	0.54 (<0.001)	356	0.22 (0.04)	239	0.54 (0.30-0.69)	0 (0-0.37)	0.47 (0.34-0.60)
Overall Participation Scale	0.45 (<0.001)	356	0.23 (<0.001)	239	0.44 (0.26-0.56)	0.01 (0-0.27)	0.55 (0.46-0.63)

Table 2.3 Voter Turnout

	Bivariate Correlation	A (95% CI)	C (95% CI)	E (95% CI)	A (95% CI)	E (95% CI)	Difference in Model Fit (Chi Square Test p-value
Openness	0.10***	0.84 (0.26-1.87)	-0.06 (-1.19-0.56)	0.23 (-0.34-0.88)	0.77 (0.13-1.32)	0.23 (-0.33-0.86)	0.77
Conscientiousness	0.05						
Extraversion	0.02						
Agreeableness	0.08*	1.56 (-0.31-5.74)	-0.57 (-4.64-1.08)	0.02 (-1.62-0.96)	0.94 (-0.02-2.50)	0.06 (-1.54-1.01)	0.69
Neuroticism	0.04						

Correlations are significant at * p<0.05, ** p<.01, and *** p<0.001

Table 2.4 Participation

	Bivariate Correlation	A (95% CI)	C (95% CI)	E (95% CI	A (95% CI)	E (95% CI)	Difference in Model Fit (Chi Square Test p-value
Openness	0.25***	0.73 (0.37-1.01)	0.03 (-0.06-0.38)	0.24 (0.01-0.47)	0.77 (0.53-0.98)	0.24 (0.02-0.47)	0.99
Conscientiousness	-0.05						
Extraversion	0.16***	0.51 (-0.20-1.01)	0.06 (-0.19-0.89)	0.43 (0.05-0.84)	0.57 (0.14-0.92)	0.43 (0.08-0.85)	0.99
Agreeableness	0.03						
Neuroticism	0.10**	0.01 (-2.35-1.56)	0.05 (-1.03-2.10)	0.94 (0.12-2.45)	0.07 (-1.51-0.79)	0.93 (0.20-2.50)	0.99

Correlations are significant at * $p<0.05$, ** $p<.01$, and *** $p<0.001$

Table 2.5 Political Interest

	Bivariate Correlation	A (95% CI)	C (95% CI)	E (95% CI)	A (95% CI)	E (95% CI)	Difference in Model Fit (Chi Square Test p-value
Openness	0.25**	0.44 (-0.04-0.80)	0.13 (-0.03-0.54)	0.43 (0.18-0.65)	0.58 (0.35-0.83)	0.42 (0.17-0.65)	0.96
Conscientiousness							
Extraversion	0.17***	0.28 (-0.70-0.81)	0.14 (-0.09-1.07)	0.59 (0.23-0.99)	0.43 (0.02-0.75)	0.57 (0.24-0.98)	0.98
Agreeableness							
Neuroticism	0.07*	-0.21 (-3.54-2.29)	-0.01 (-3.28-1.47)	1.21 (0.28-4.32)	-0.20 (-4.18-0.66)	1.20 (0.33-5.18)	0.99

Correlations are significant at * $p<0.05$, ** $p<.01$, and *** $p<0.001$

Table 2.6 Political Knowledge

	Bivariate Correlation	A (95% CI)	C (95% CI)	E (95% CI)	A (95% CI)	E (95% CI)	Difference in Model Fit (Chi Square Test p-value
Openness	0.18***	0.75 (0.30-1.14)	0 (-0.34-0.13)	0.25 (-0.10-0.62)	0.75 (0.40-1.10)	0.20 (-0.35-0.73)	1.00
Conscientiousness	0.01						
Extraversion	-0.01						
Agreeableness	-0.02						
Neuroticism	0.13***	0.79 (-0.12-1.91)	0 (-1.21-0.56)	0.21 (-0.47-0.73)	0.79 (0.21-1.36)	0.21 (-0.36-0.77)	1.00

Correlations are significant at * $p<0.05$, ** $p<.01$, and *** $p<0.001$

Table 3.1 Indicators of the Big Five

Personality factor	Component terms	Scale Mean (s.d.)	Pearson's R	Number of Cases
A. 2004 Community Survey				
Openness to Experience	Confident - unconfident Intelligent – unintelligent	0.62 (0.27)	0.41	822
Conscientiousness	Organized – disorganized Neat – sloppy	0.54 (0.29)	0.52	822
Extraversion	Extraverted – introverted Outgoing – reserved	0.46 (0.28)	0.57	822
Agreeableness	Kind – unkind Sympathetic – unsympathetic	0.68 (0.27)	0.39	822
Emotional Stability	Calm – tense Relaxed – nervous	0.52 (0.28)	0.57	822
B. 2006 National Survey				
Openness to Experience	An intellectual – not an intellectual Philosophical – unreflective	0.46 (0.22)	0.28	1,098
Conscientiousness	Sloppy – neat Hard working – lazy	0.57 (0.25)	0.29	1,132
Extraversion	Outgoing – shy Introverted – extraverted	0.41 (0.26)	0.53	1,102
Agreeableness	Sympathetic – unsympathetic Unkind – kind	0.63 (0.25)	0.47	1,128
Emotional Stability	Relaxed –tense Nervous – calm	0.40 (0.22)	0.43	1,131

Note: Scales are constructed using logged data and scale values range from 0 (lowest observed value on the trait) to 1 (highest observed value).

Table 3.2 Personality, Network Size and Attempts to Persuade Others

	Network Size	Persuade Others
Variable	Coefficient (s.e.)	Coefficient (s.e.)
Openness to Experience	1.00**	2.01***
	(0.30)	(0.36)
Conscientiousness	-0.46#	-0.27
	(0.26)	(0.31)
Extraversion	1.03***	0.38
	(0.24)	(0.29)
Agreeableness	0.24	-0.08
	(0.27)	(0.33)
Emotional Stability	-0.80**	-0.78*
	(0.28)	(0.35)
Age	-0.00	-0.00
	(0.00)	(0.01)
Race	-0.59#	-0.78#
	(0.30)	(0.42)
Sex	0.12	-0.13
	(0.12)	(0.15)
Education	0.12***	0.08*
	(0.03)	(0.04)
Constant		-1.27**
		(0.37)
Cut-Point #1	-0.92**	
	(0.31)	
Cut-Point #2	0.16	
	(0.31)	
Cut-Point #3	0.93**	
	(0.31)	
Cut-Point #4	1.61***	
	(0.31)	
Model χ^2	81.62	65.81
Number of Cases	1018	1036

Note: Cell entries for Column 1 are ordered logistic regression coefficients. Cell entries for Column 2 are binomial logistic regression coefficients. . *** p< 0.001, ** p< 0.01, * p< 0.05, # p< 0.10; Source: 2006 National Survey

Table 3.3 Personality and the Context of Discussion

	Family		Friends		Neighborhood		Clubs		Church		Work	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Openness	0.00	-0.20	0.92**	0.48	0.50	0.33	0.57	0.14	0.04	-0.010	0.40	-0.05
	(0.34)	(0.34)	(0.34)	(0.35)	(0.33)	(0.33)	(0.35)	(0.36)	(0.35)	(0.35)	(0.34)	(0.35)
Conscientiousness	0.63*	0.66*	0.37	0.43	0.56*	0.58*	0.58#	0.62*	0.54	0.55#	0.19	0.20
	(0.28)	(0.29)	(0.29)	(0.29)	(0.28)	(0.28)	(0.30)	(0.31)	(0.30)	(0.30)	(0.30)	(0.30)
Extraversion	0.33	0.17	0.51#	0.19	0.14	0.01	1.05***	0.84**	0.62*	0.54#	0.57*	0.27
	(0.27)	(0.28)	(0.27)	(0.28)	(0.26)	(0.27)	(0.29)	(0.29)	(0.28)	(0.28)	(0.28)	(0.28)
Agreeableness	0.10	0.05	-0.05	-0.19	-0.23	-0.29	-0.14	-0.20	-0.07	-0.11	0.09	0.00
	(0.32)	(0.32)	(0.32)	(0.33)	(0.31)	(0.32)	(0.34)	(0.34)	(0.34)	(0.34)	(0.33)	(0.34)
Emotional Stability	0.20	0.28	-0.02	0.14	-0.23	-0.18	-0.36	-0.21	0.08	0.11	-0.17	0.03
	(0.30)	(0.30)	(0.30)	(0.31)	(0.29)	(0.29)	(0.31)	(0.32)	(0.31)	(0.31)	(0.31)	(0.31)
Age	0.03***	0.02***	0.01	0.00	0.02***	0.02***	0.00	-0.00	0.00	0.00	-0.02***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Race	0.21	0.21	0.23	0.24	0.20	0.23	0.55**	0.58**	0.73***	0.72***	0.38#	0.37#
	(0.20)	(0.20)	(0.20)	(0.21)	(0.19)	(0.19)	(0.21)	(0.21)	(0.20)	(0.20)	(0.20)	(0.21)
Sex	0.11	0.15	-0.07	-0.00	-0.17	-0.14	-0.21	-0.18	-0.10	-0.07	-0.29#	-0.22
	(0.16)	(0.16)	(0.16)	(0.16)	(0.15)	(0.15)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Education	0.03	0.00	0.03	-0.04	-0.06	-0.08*	0.11*	0.07	-0.02	-0.04	0.10*	0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Frequency of Discussion		0.49***		1.16***		0.37***		0.74***		0.32**		0.88***
		(0.10)		(0.11)		(0.10)		(0.11)		(0.10)		(0.11)
Cut-point #1	-0.45	0.27	-2.33***	-.081#	-0.30	0.28	-0.41	0.62	-0.21	0.23	-1.82***	-0.70#
	(0.37)	(0.40)	(0.42)	(0.44)	(0.35)	(0.38)	(0.38)	(0.41)	(0.37)	(0.40)	(0.37)	(0.40)
Cut-point #2	0.94**	1.69***	-0.13	1.57***	1.33***	1.93***	1.09**	2.21***	1.17**	1.63***	-0.66#	0.54
	(0.36)	(0.39)	(0.36)	(0.40)	(0.35)	(0.39)	(0.38)	(0.42)	(0.37)	(0.41)	(0.36)	(0.40)
Cut-point #3	2.42***	3.21***	1.95***	3.99***	3.02***	3.65***	2.81***	4.04***	2.62***	3.10***	0.89*	2.26***
	(0.37)	(0.41)	(0.37)	(0.43)	(0.37)	(0.41)	(0.39)	(0.44)	(0.39)	(0.42)	(0.37)	(0.41)
Model χ^2	47.30	72.18	27.40	149.33	33.20	48.28	41.41	90.32	31.82	41.75	44.81	114.18
Number of Cases	649	649	649	649	650	650	563	563	574	574	577	577

Note: Cell entries are ordered logistic regression coefficients. *** p< 0.001, ** p< 0.01, * p< 0.05, # p< 0.10. Source: 2004 Community Survey

Table 3.4 Personality and the Nature of Ties and Differing Political Views among Political Discussants

Variable	No Discussant Coefficient (s.e.)	Close Tie Coefficient (s.e.)	Discussant Holds Different Views Coefficient (s.e.)
Openness to Experience	-0.49 (0.60)	-0.11 (0.43)	-0.66# (0.37)
Conscientiousness	0.06 (0.52)	0.46 (0.37)	0.20 (0.31)
Extraversion	0.45 (0.49)	0.43 (0.35)	-0.17 (0.30)
Agreeableness	0.96 (0.61)	0.48 (0.42)	-0.44 (0.36)
Emotional Stability	-0.07 (0.54)	-0.81* (0.38)	0.86* (0.33)
Age	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
Race	-0.59# (0.33)	-0.80** (0.23)	-0.09 (0.22)
Sex	0.19 (0.29)	0.21 (0.20)	-0.21 (0.17)
Education	-0.29*** (0.08)	0.03 (0.05)	-0.05 (0.05)
Constant	-0.29 (0.65)	0.53 (0.45)	
Cut-Point #1			-0.04 (0.39)
Cut-Point #2			1.98*** (0.41)
Model χ^2	60.86		15.34
Number of Cases	732		643

Note: Cell entries for Column 1 and Column 2 are multinomial logistic regression coefficients, with "distant/casual tie" as the contrast category. Cell entries for Column 3 are ordered logistic regression coefficients.
** p< .01, * p < .05, # p < .10; Source: 2004 Community Survey

Table 3.5 Personality, Network Size and Exposure to Cross-Cutting Political Discourse

	Baseline	Personality
Variable	Coefficient (s.e.)	Coefficient (s.e.)
Openness to Experience	-0.88*	0.25
	(0.41)	(1.03)
Conscientiousness	0.15	-0.12
	(0.35)	(0.95)
Extraversion	-0.01	-2.28*
	(0.32)	(1.03)
Agreeableness	-0.45	2.03*
	(0.37)	(0.98)
Emotional Stability	0.17	0.08
	(0.39)	(0.96)
Age	0.00	0.00
	(0.01)	(0.01)
Race	-1.43*	-1.61*
	(0.66)	(0.67)
Sex	-0.49**	-0.51**
	(0.05)	(0.17)
Education	0.01	0.01
	(0.04)	(0.04)
Network Size	0.45***	0.82**
	(0.07)	(0.25)
Openness to Experience x Network Size		-0.40
		(0.33)
Conscientiousness x Network Size		0.06
		(0.30)
Extraversion x Network Size		0.75*
		(0.31)
Agreeableness x Network Size		-0.85**
		(0.31)
Emotional Stability x Network Size		0.04
		(0.32)
Constant	-0.96*	-1.90*
	(0.48)	(0.85)
Model χ^2	68.85	83.08
Number of Cases	785	785

Note: Cell entries are binomial logistic regression coefficients. *** p< 0.001, ** p< 0.01, * p< 0.05, # p< 0.10; Source: 2006 National Survey

Table 3.6 Personality and Discussant Influence

	2004 Community Survey		2006 National Survey	
	Baseline Model (1)	Full Model (2)	Baseline Model (3)	Full Model (4)
Variable	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)
Age	0.00 (0.00)	0.00 (0.01)	-0.01* (0.00)	-0.01# (0.01)
Race	-0.35# (0.21)	-0.33 (0.23)	-0.60 (0.42)	-0.92# (0.49)
Sex	-0.15 (0.15)	-0.22 (0.17)	0.02 (0.14)	0.11 (0.15)
Education	-0.10* (0.04)	-0.09# (0.05)	-0.08* (0.04)	-0.07# (0.04)
Party Identification	0.57*** (0.05)	0.58*** (0.05)	0.56*** (0.04)	0.55*** (0.05)
Ideology	0.72*** (0.09)	0.75*** (0.10)	0.42*** (0.05)	0.42*** (0.05)
Trust in Others	0.12# (0.07)	0.13# (0.07)		
No Discussant	-0.00 (0.23)	-0.04 (0.24)	-0.11* (0.05)	-0.09* (0.05)
Discussant Political View	0.47*** (0.06)	0.19 (0.17)	0.28*** (0.05)	-0.16 (0.18)
Openness to Experience		-0.19 (0.35)		-0.23 (0.39)
Conscientiousness		0.31 (0.31)		0.17 (0.32)
Extraversion		-0.07 (0.30)		-0.27 (0.32)
Agreeableness		0.31 (0.36)		-0.20 (0.34)
Emotional Stability		-0.09 (0.33)		-0.25 (0.34)
Influence-Openness Interaction		0.45* (0.23)		0.66* (0.28)
Influence-Conscientiousness Interaction		0.29 (0.19)		0.27 (0.20)
Influence-Extraversion Interaction		0.06 (0.19)		-0.22 (0.20)
Influence-Agreeableness Interaction		-0.28 (0.22)		-0.06 (0.21)
Influence-Emotional Stability Interaction		-0.02 (0.20)		0.36 (0.24)
Cut-Point #1	1.13** (0.36)	1.40** (0.44)	1.44*** (0.35)	1.35** (0.44)
Cut-Point #2	2.91*** (0.38)	3.22*** (0.45)	2.55*** (0.36)	2.44*** (0.44)
Cut-Point #3	5.75*** (0.44)	6.02*** (0.51)	5.01*** (0.39)	4.89*** (0.47)
Model χ^2	618.101	568.57	842.67	813.77
Number of Cases	768	705	1056	1003

Note: Cell entries are ordered logistic regression coefficients. *** p< 0.001, ** p< 0.01, * p< 0.05, # p< 0.10
Source: 2004 Community Survey and 2006 National Survey

Figures

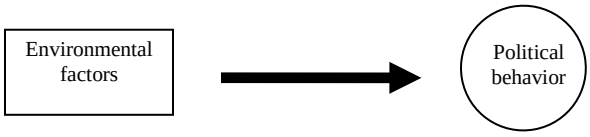


Figure 1.1 Traditional View of the Antecedents of Political Behavior

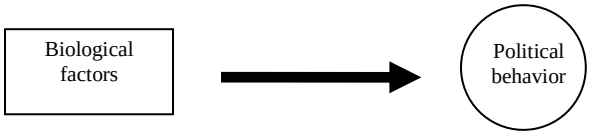


Figure 1.2 Simplistic View of Biological Influence on Political Behavior

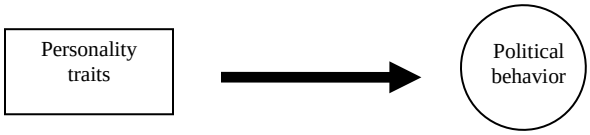


Figure 1.3 Simplistic View of Personality Influence on Political Behavior

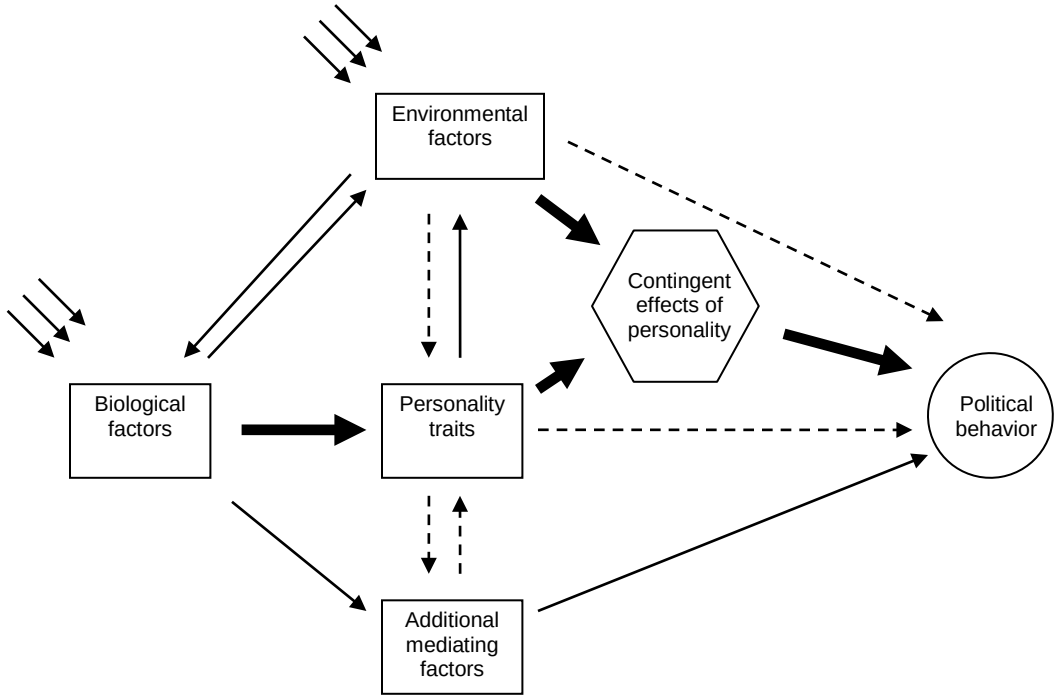
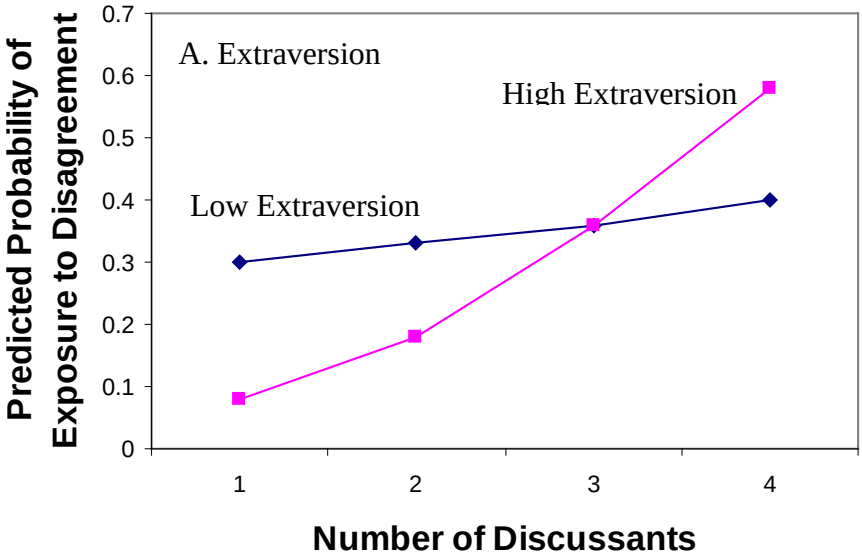


Figure 1.4 Personality in Context
Note: Lines in bold represent the central paths by which personality traits are hypothesized to affect political behavior. Additional solid lines represent other known antecedents of political behavior and dashed lines represent additional plausible antecedents of political behavior.



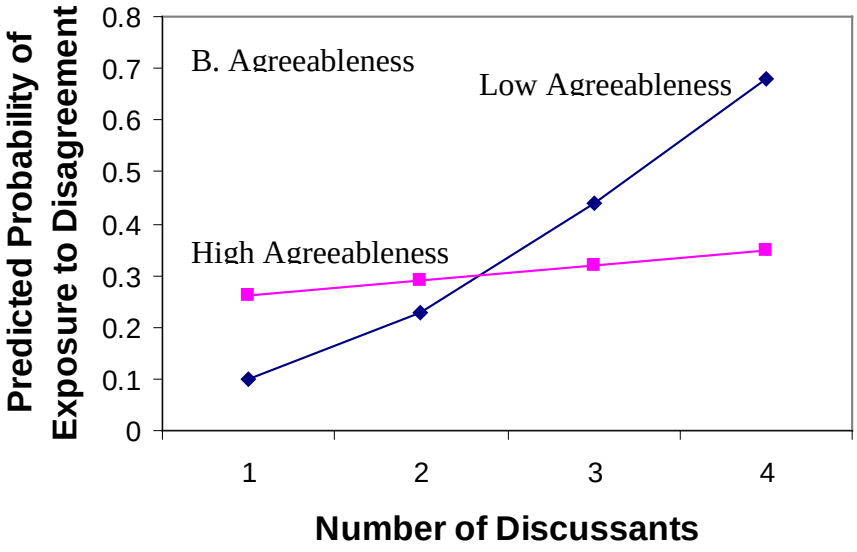


Figure 3.1 The Conditional Impact of Network Size on Exposure to Disagreement

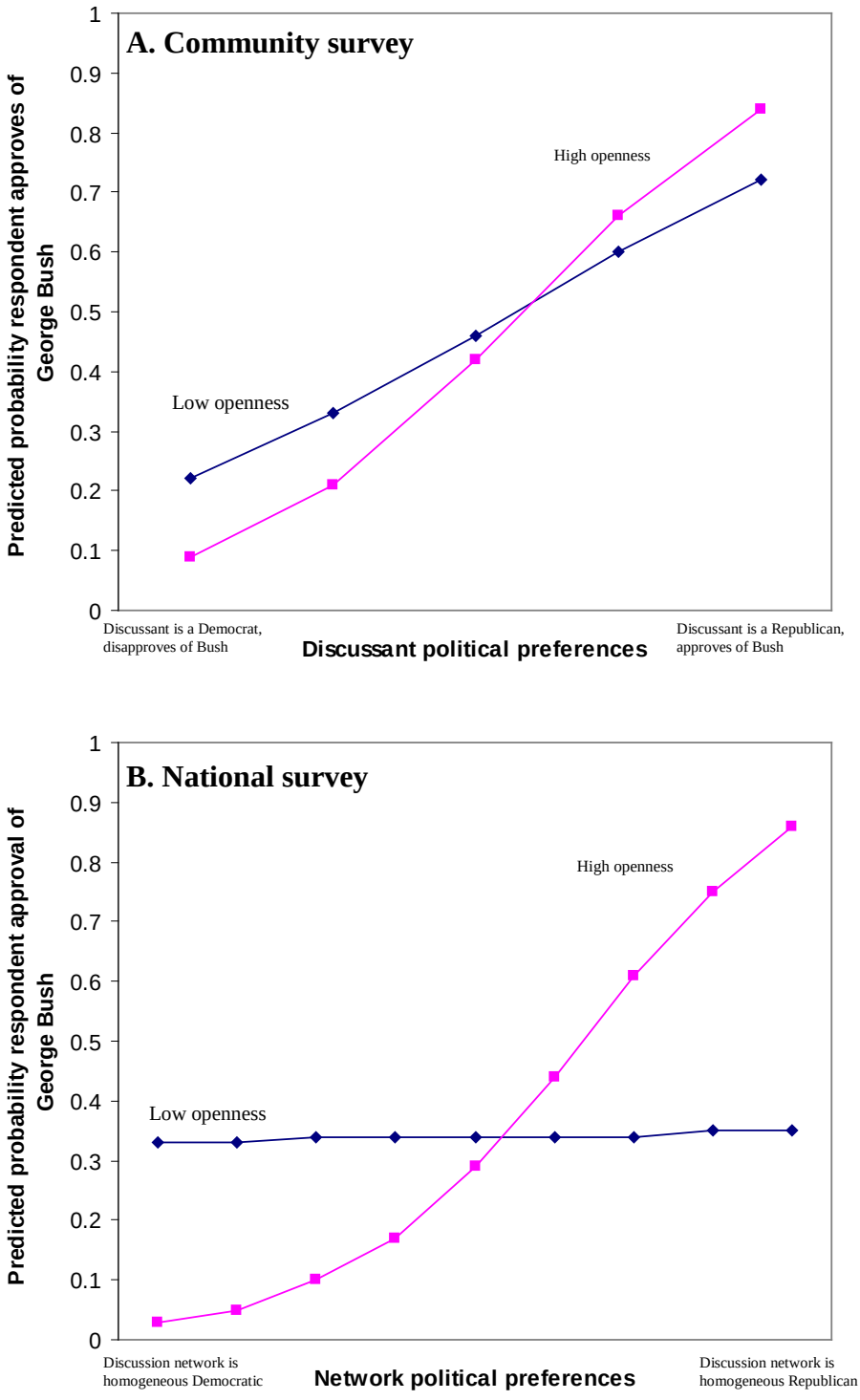


Figure 3.2. Discussant political preferences, openness to experience, and approval of George Bush as president

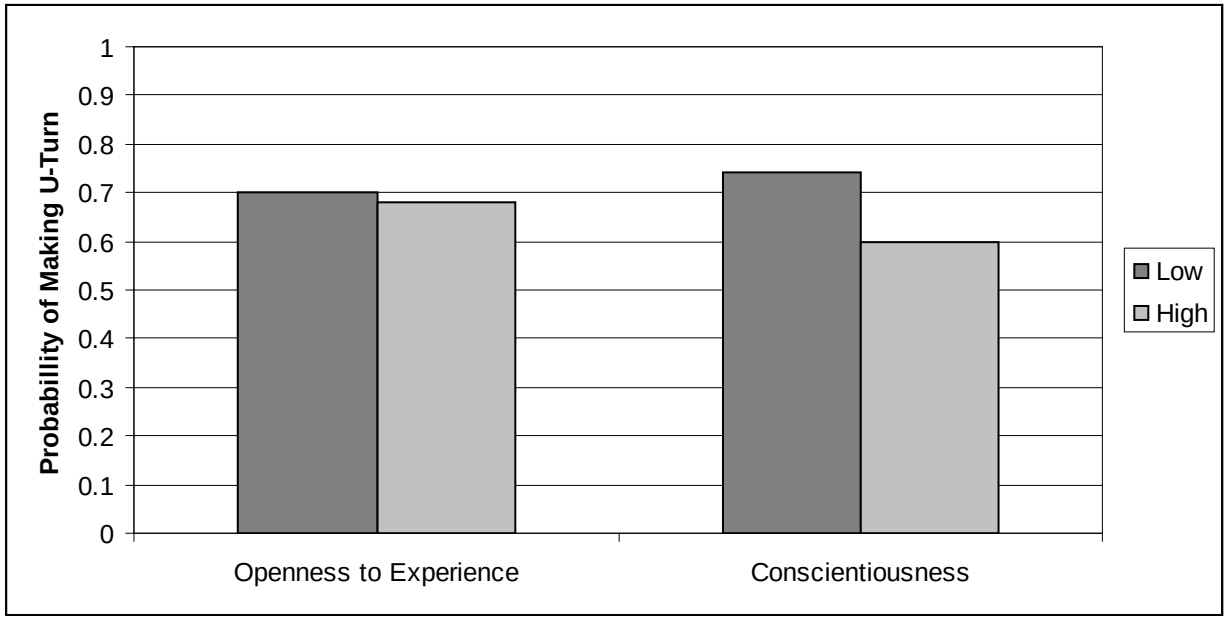


Figure 4.1 Personality Effects for the U-Turn Decision

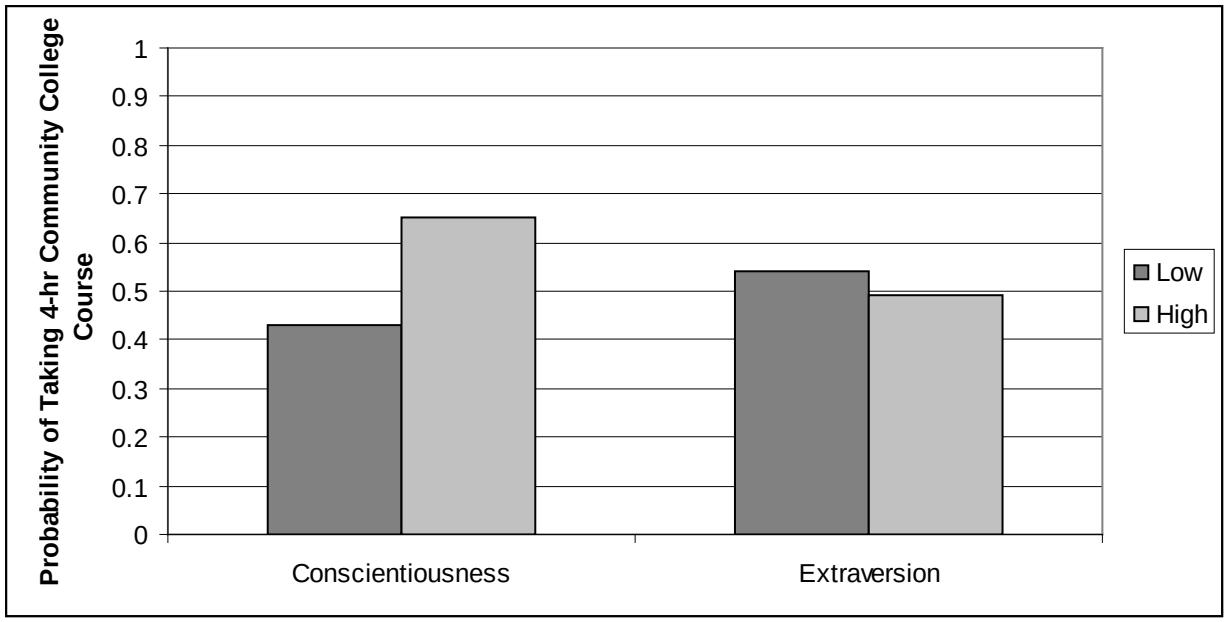


Figure 4.2 Personality Effects for the Traffic Course Decision

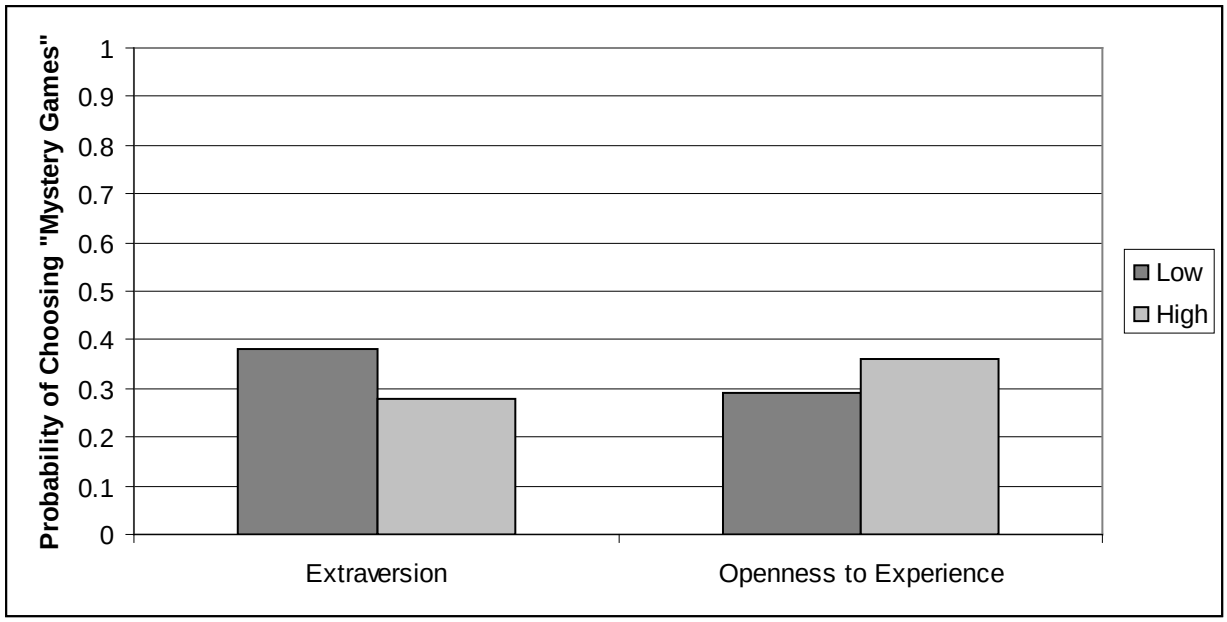


Figure 4.3 Personality Effects for the Games Decision

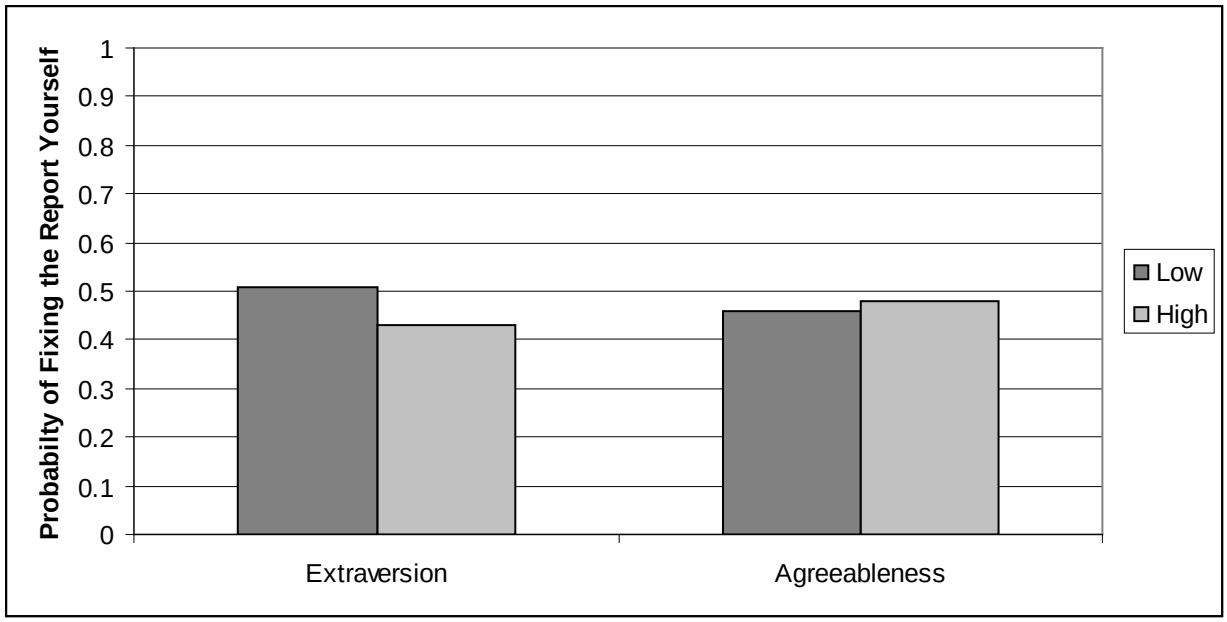


Figure 4.4 Personality Effects for the School Report Decision

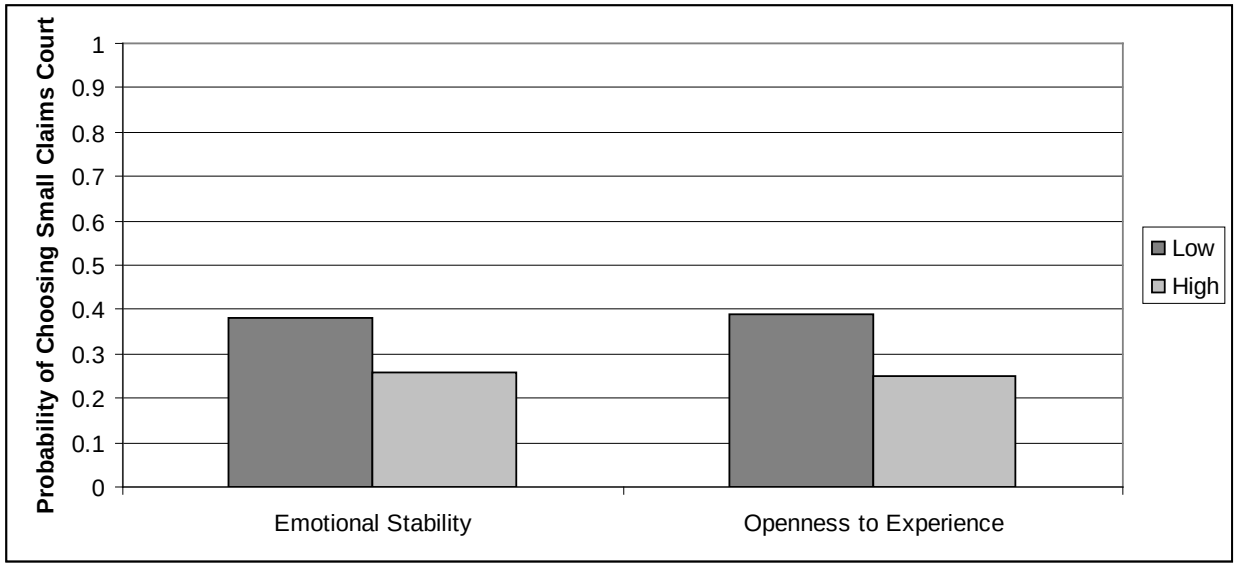


Figure 4.5 Personality Effects for the Court Decision

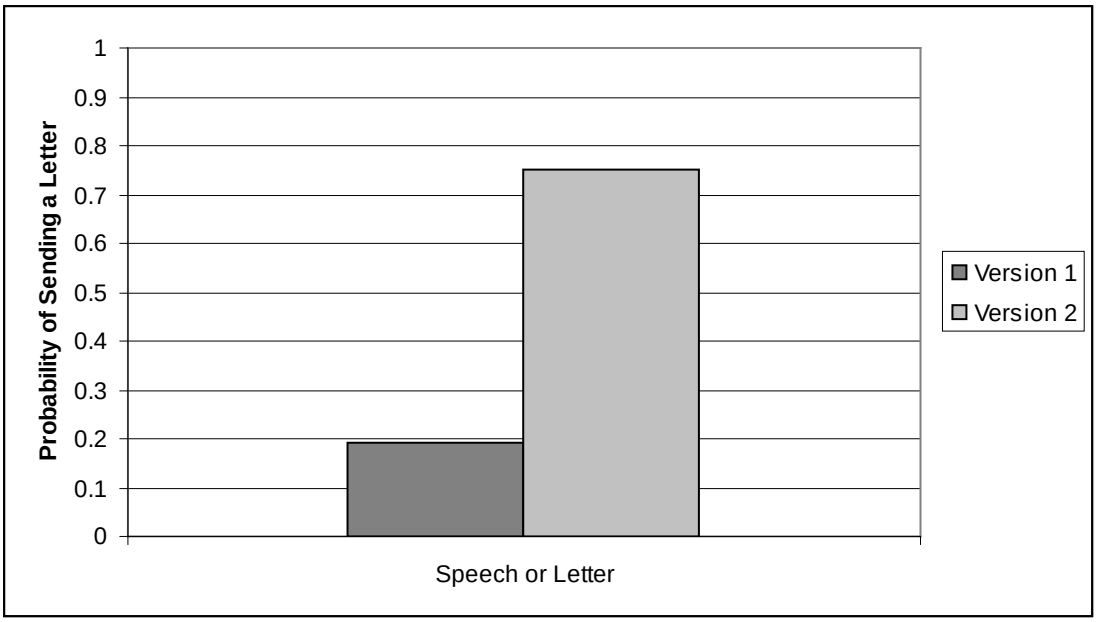


Figure 4.6 Version Effect for the City Council Decision

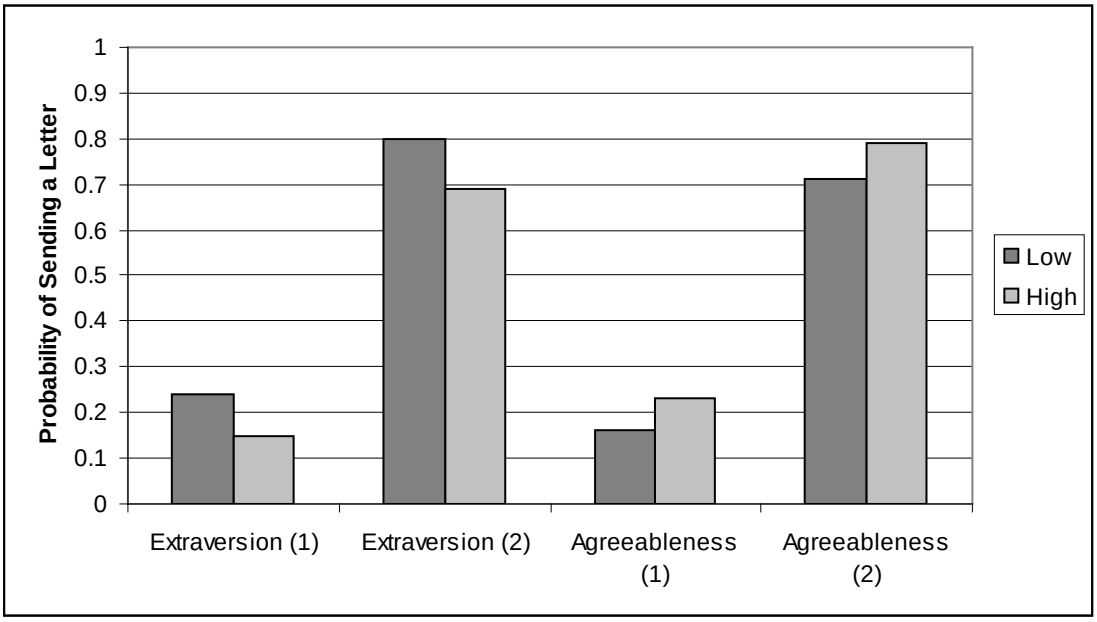


Figure 4.7 Personality Effects for the City Council Decision

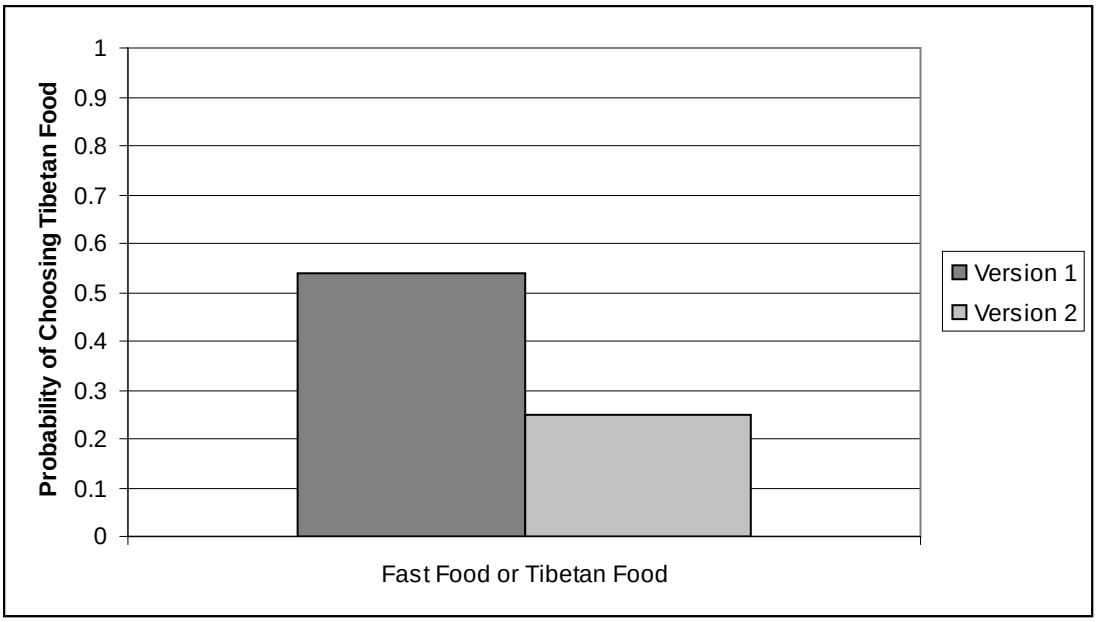


Figure 4.8 Version Effect for the Lunch Decision

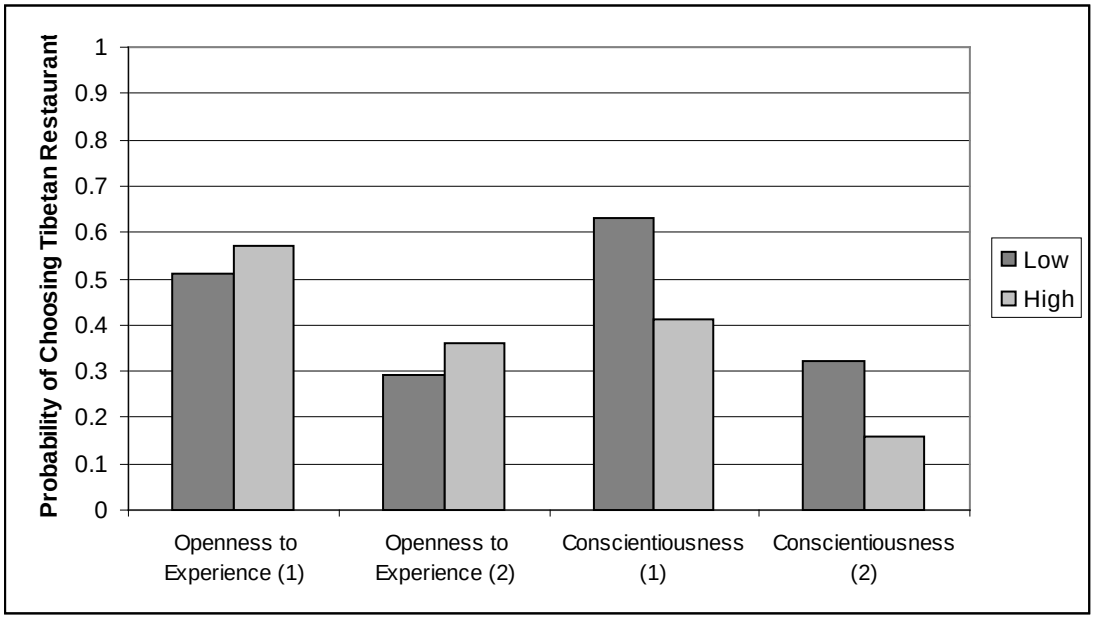


Figure 4.9 Personality Effects for the Lunch Decision

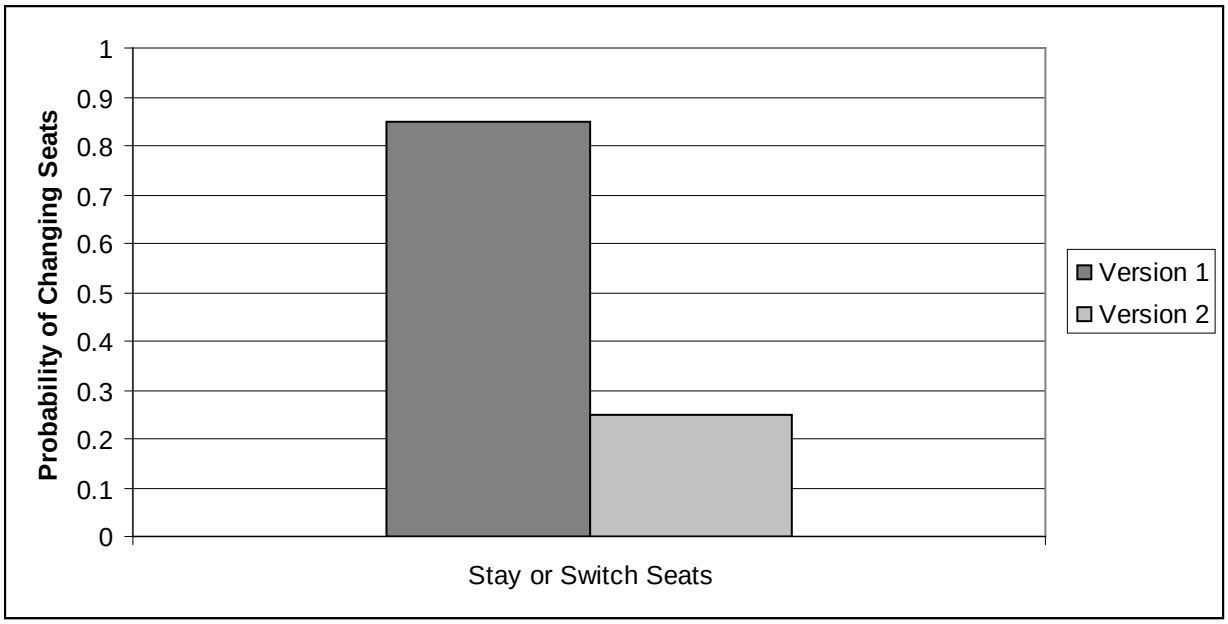


Figure 4.10 Version Effect for the Airplane Decision

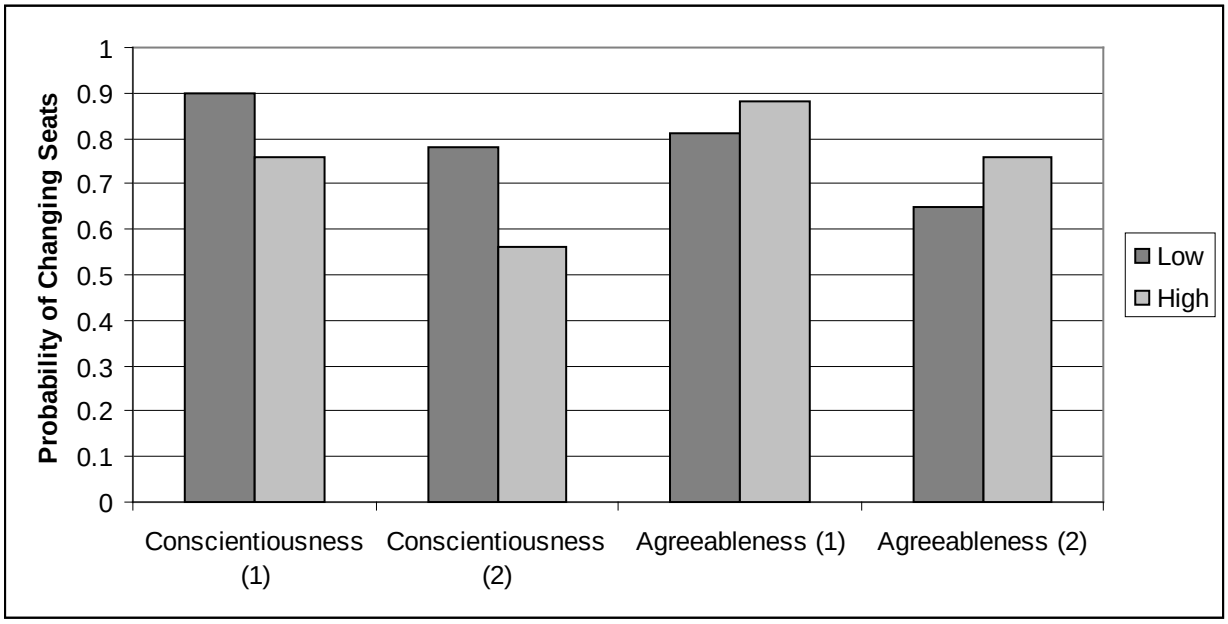


Figure 4.11 Personality Effects for the Airplane Decision

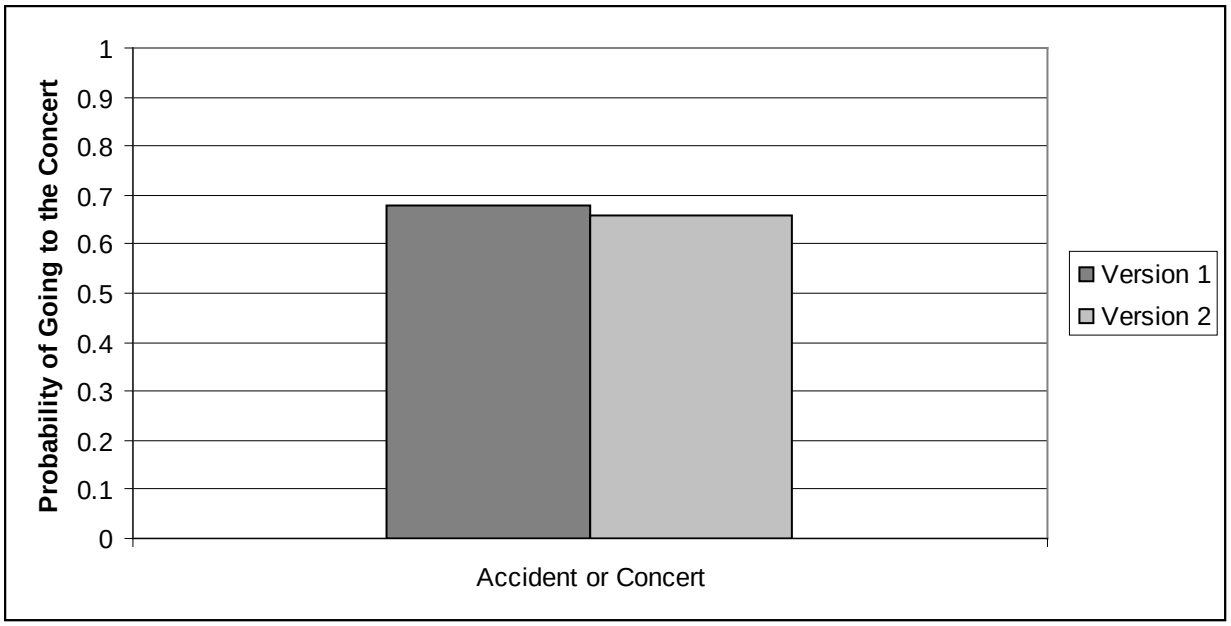


Figure 4.12 Version Effect for the Concert Decision

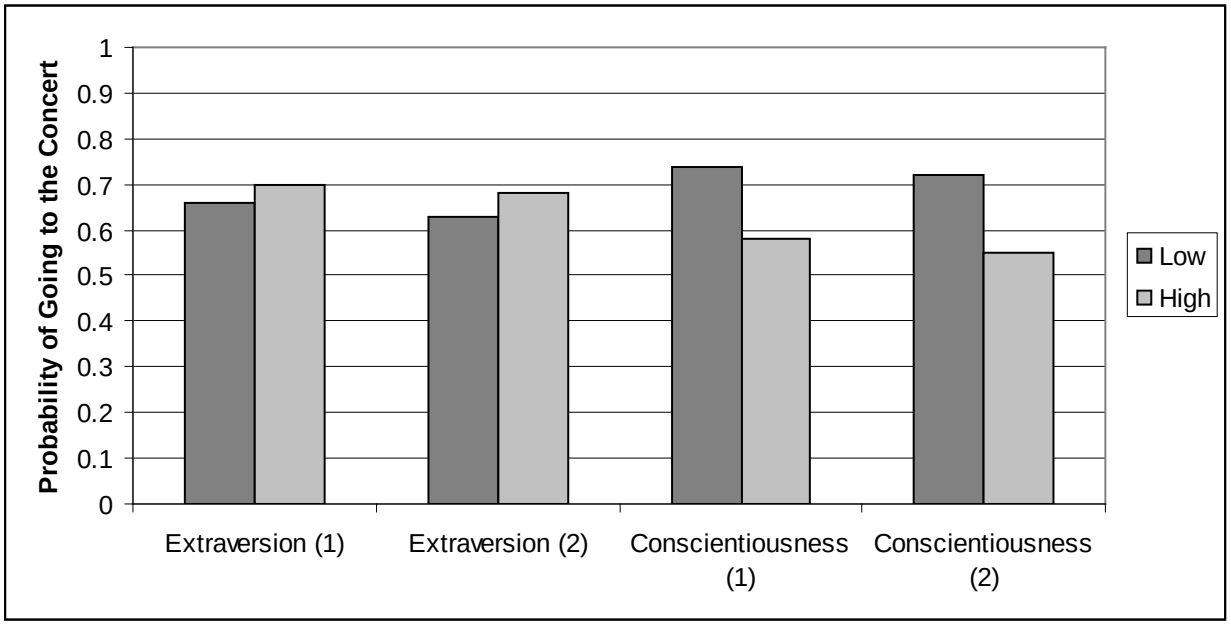


Figure 4.13 Personality Effects for the Concert Decision

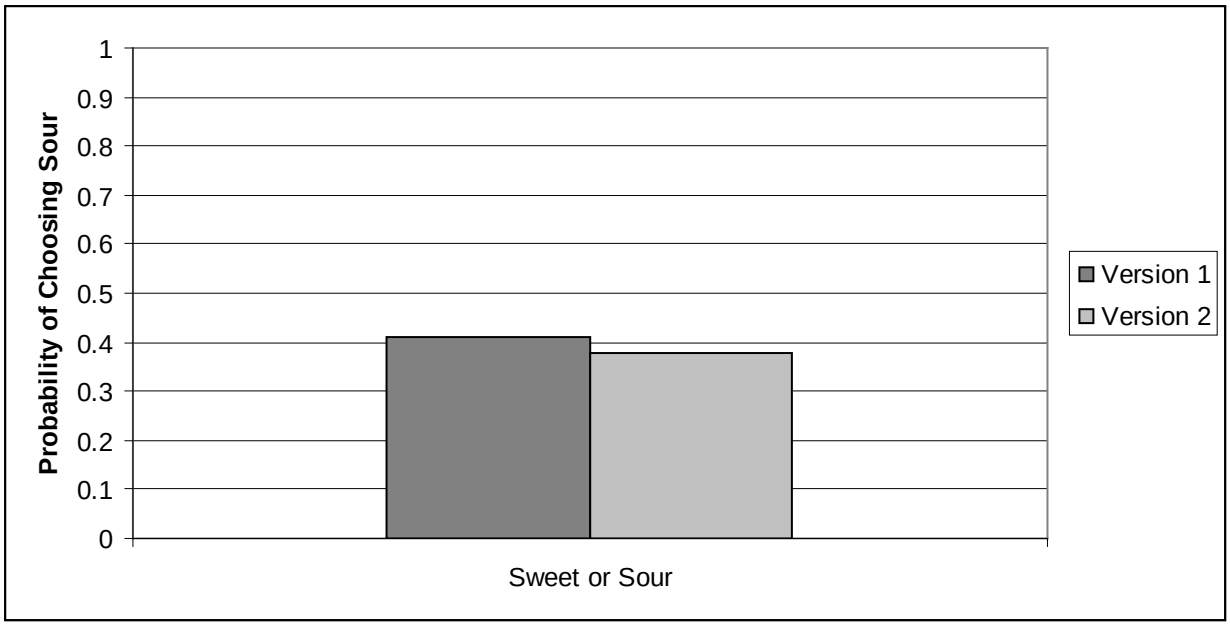


Figure 4.14 Version Effect for the Sweet or Sour Decision

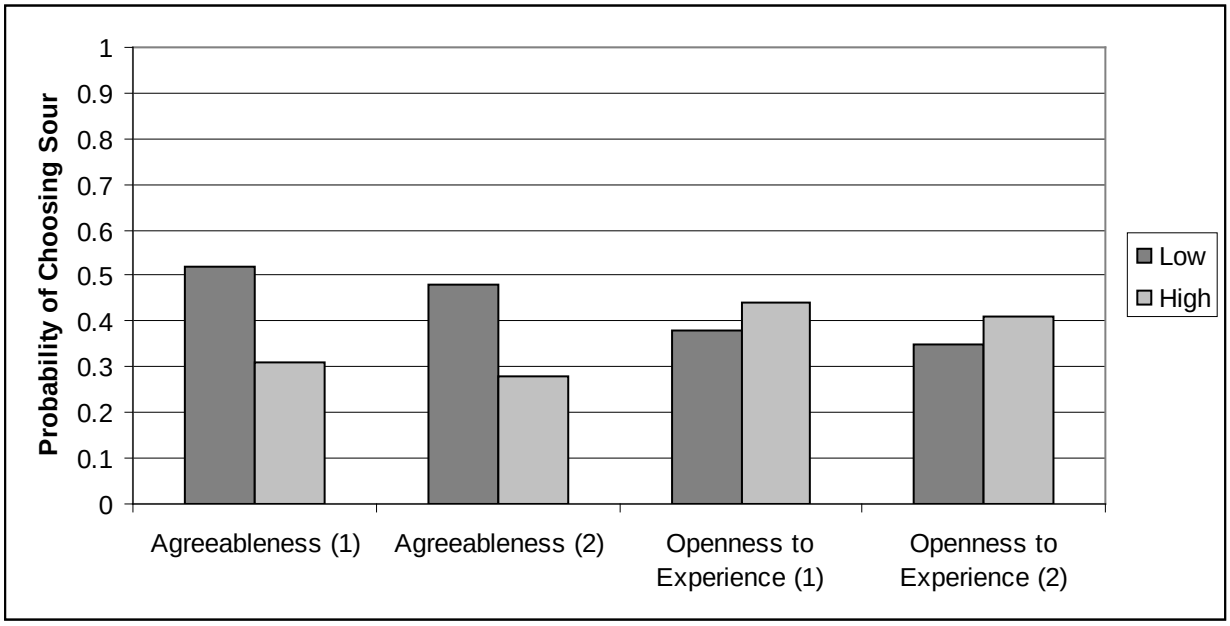


Figure 4.15 Personality Effects for the Sweet or Sour Decision

Appendix A: Personality Survey for Chapter 4

Now we would like to ask you a few questions about yourself. The following section contains pairs of words. On a scale of zero to ten, which word best describes you? For example, on the first pair of words, the number zero means "unimaginative," the number 10 means "imaginative," and the number 5 is exactly the middle-neither unimaginative nor imaginative. On this scale, what number best represents you? You can use any number from zero to ten.

Please place yourself on the scale. Please circle one number per item. Please answer every item.

0 1 2 3 4 5 6 7 8 9 10
Unimaginative Imaginative

0 1 2 3 4 5 6 7 8 9 10
Reserved Outgoing

0 1 2 3 4 5 6 7 8 9 10
Tense Calm

0 1 2 3 4 5 6 7 8 9 10
Reliable Unreliable

0 1 2 3 4 5 6 7 8 9 10
Uncooperative Cooperative

0 1 2 3 4 5 6 7 8 9 10
Talkative Quiet

0 1 2 3 4 5 6 7 8 9 10
Kind Unkind

0 1 2 3 4 5 6 7 8 9 10
Bold Shy

0 1 2 3 4 5 6 7 8 9 10
Sloppy Neat

0 1 2 3 4 5 6 7 8 9 10
Steady Moody

0 1 2 3 4 5 6 7 8 9 10
Careless Careful

0 1 2 3 4 5 6 7 8 9 10
Uninquisitive Curious

0 1 2 3 4 5 6 7 8 9 10
Relaxed Nervous

0 1 2 3 4 5 6 7 8 9 10
Philosophical Practical

0 1 2 3 4 5 6 7 8 9 10
Cold Warm

0 1 2 3 4 5 6 7 8 9 10
Responsible Irresponsible

0 1 2 3 4 5 6 7 8 9 10
Creative Uncreative

0 1 2 3 4 5 6 7 8 9 10
Sympathetic Unsympathetic

0 1 2 3 4 5 6 7 8 9 10
Extraverted Introverted

0 1 2 3 4 5 6 7 8 9 10
Simple Complex

0 1 2 3 4 5 6 7 8 9 10
Insecure Secure

0 1 2 3 4 5 6 7 8 9 10
Inhibited Spontaneous

0 1 2 3 4 5 6 7 8 9 10
Lazy Hardworking

0 1 2 3 4 5 6 7 8 9 10
Harsh Gentle

0 1 2 3 4 5 6 7 8 9 10
Content Discontented

Appendix B: Decision Making Survey for Chapter 4

We are interested in the choices people make in various hypothetical situations. This survey includes descriptions of ten very different types of decision-making situations. We ask that you read each one carefully, and indicate your choice.

Decision #1.

Suppose that you are driving on the highway late at night when you realize that you left your cell phone at a restaurant a half hour ago. Your friend is with you, so you call your phone and learn that the restaurant manager is holding it for you. To retrieve your phone, you can safely make a U-turn on the highway, but a sign there says "Emergency Vehicles Only." Otherwise, you will have to continue to the next exit, which is 15 miles ahead, and turn around there. Consider these scenarios:

1. If you continue to the next exit before turning back, it will take you one hour to get back to the restaurant because it is 15 minutes until the next exit, 15 minutes back to your current location, and 30 minutes from your current location back to the restaurant. You are delayed an extra 30 minutes.

2. If you make a U-turn, two outcomes are possible:
    a. There is a 99% chance that you will return directly to the restaurant. You experience no additional cost or delay.
    b. There is a 1% chance that you will be pulled over by a police officer for making an illegal U-turn. The traffic stop will delay you and you will receive a ticket. You are delayed an extra 30 minutes and must pay a $125 ticket.

Given these scenarios, which course of action would you choose? (circle one):

Choice #1: proceed to the next exist before turning around to retrieve your cell phone.

Choice #2: make a U-turn now and proceed immediately to retrieve your cell phone.

Decision #2

You receive a speeding ticket. In order to keep the ticket off of your driving record and avoid an increase in your auto insurance rate, you decide to enroll in a safe driving course. The state provides two choices. The first choice is to participate in an on-line course. This course takes six hours to complete. You can take the course at home on your computer. The second choice is to participate in an in-person course where you would listen to live lectures and participate in group discussion with the other drivers enrolled in the course. This course takes only four hours to complete, but you would have to go to the local community college to take the course. Which would you choose (circle one):

Six-hour on-line course Four-hour course at the community college

Decision #3

You are at the freshman orientation a few days before your first semester of college. In one activity, from 11:00 to 12:00, all students are required to sign up to play some games. You have two choices. Choice #1 includes a variety of what are labeled as "picnic games," including badminton, lawn bowling, bag toss, and flag football. Choice #2 includes a variety of what are labeled as "mystery games." Which would you choose? (circle one):

Picnic games Mystery games

Decision #4

In one of your classes, you are paired with another student. Together, the two of you have to complete a ten-page research project. Two days before the project is due, you receive the other student's part. You are unwilling to hand in the project until the other student's portion is improved. You have two options. First, you could confront the other student and demand that the job be done right. The other student has an attitude problem, and this option likely will result in a big argument, but it's the only way to get the student to improve the work. The second option is to just do it yourself. The other student will get the same credit as you, but at least you'll be sure the job is done right. Which would you choose? (circle one):

Choice #1: Confront the other student about the report

Choice #2: Fix the report yourself

Decision #5.

Twenty years from now, when you have been a successful lawyer for about fifteen years, the Governor asks you to accept an appointment as a judge. Two positions are available, and you get to choose which one you would like to take. In the first position, a criminal court, you mostly would preside over murder trials. You would have to hear a great deal of traumatic testimony, and you would be called on to make what are truly life-and-death decisions. In the second position, you would preside over civil cases in small claims court. Some of the cases might be rather boring, but you would not have to anguish over your decisions. Which court would you choose? (circle one):

Criminal court Small claims court

Decision #6 (Version 1).

Suppose that the local city council is considering passing a new tax that will cost you $1,000 per year. You can express your opposition to the new tax in one of two ways: by attending a council meeting and speaking out against the tax at the meeting, or by writing a letter to your council member stating that you oppose the new tax. Consider these scenarios:

1. If you speak at the council meeting, three outcomes are possible:
    a. There is 60% chance the council will still go ahead and impose the new tax. You pay $1,000.
    b. There is a 30% chance the council will agree with you, and vote against the new tax. You pay nothing.
    c. There is a 10% chance the council will be angered by public criticism, and raise the tax. You pay $1,200.

2. If you send a letter to your council member, two outcomes are possible:
    a. There is a 90% chance the council will still go ahead and impose the new tax. You pay $1,000.
    b. There is a 10% chance the council will agree with you, and vote against the new tax. You pay nothing.

Given these scenarios, which course of action would you choose? (circle one):

Choice #1: Speak in opposition to the tax at a council meeting.

Choice #2: Send a letter in opposition to the tax to your council member.

Decision #6 (Version 2).

Suppose that the local city council is considering passing a new tax that will cost you $1,000 per year. You can express your opposition to the new tax in one of two ways: by attending a council meeting and speaking out against the tax at the meeting, or by writing a letter to your council member stating that you oppose the new tax. Consider these scenarios:

3. If you speak at the council meeting, three outcomes are possible:
    a. There is 66% chance the council will still go ahead and impose the new tax. You pay $1,000.
    b. There is a 14% chance the council will agree with you, and vote against the new tax. You pay nothing.
    c. There is a 20% chance the council will be angered by public criticism, and raise the tax. You pay $1,200.

4. If you send a letter to your council member, two outcomes are possible:
    a. There is a 72% chance the council will still go ahead and impose the new tax. You pay $1,000.
    b. There is a 28% chance the council will agree with you, and vote against the new tax. You pay nothing.

Given these scenarios, which course of action would you choose? Please circle your answer:

Choice #1: Speak in opposition to the tax at a council meeting.

Choice #2: Send a letter in opposition to the tax to your council member.

Decision #7 (Version 1).

Suppose that you are with a friend at lunchtime. You have $20 with you, but no credit cards or ATM card. You would rather not spend all of your money on lunch because you would like to have at least some money left for later. There are two restaurants near where you are. Your friend says for you to choose:

Restaurant #1 is a familiar chain restaurant. It is not the greatest food, but you know what you would order there. It would cost about $12 for your lunch.

Restaurant #2 serves Tibetan food. You have never eaten Tibetan food, and you have no idea what it would be like. The menu is in the window. All of the lunch options are the same price. It would cost about $8 for your lunch.

Which would you choose? (circle one)

Restaurant #1 (chain restaurant) Restaurant #2 (Tibetan food)

Decision #7 (Version 2).

Suppose that you are with a friend at lunchtime. You have $20 with you, but no credit cards or ATM card. You would rather not spend all of your money on lunch because you would like to have at least some money left for later. There are two restaurants near where you are. Your friend says for you to choose:

Restaurant #1 is a familiar fast food restaurant. It is not the greatest food, but you know what you would order there. It would cost about $8 for your lunch.

Restaurant #2 serves Tibetan food. You have never eaten Tibetan food, and you have no idea what it would be like. The menu is in the window. All of the lunch options are the same price. It would cost about $12 for your lunch.

Which would you choose? (circle one)

Restaurant #1 (fast food) Restaurant #2 (Tibetan food)

Decision #8 (Version 1).

You are flying in coach on a very fully flight. The flight will last two hours. As you go to be seated, a flight attendant asks if you would be willing to change seats. He tells you that the seat he would like for you to take is a middle seat, between a sobbing eight-year-old who is flying alone and a person the flight attendant describes as "a very nervous flyer." An off-duty pilot has been assigned the seat, but he wishes to move so that he can get some rest. The flight attendant offers you a $300 voucher toward a future flight if you will change seats. What is your choice? (circle one)

Keep your current seat

Change seats and accept the $300 voucher.

Decision #8 (Version 2).

You are flying in coach on a very fully flight. The flight will last two hours. As you go to be seated, a flight attendant asks if you would be willing to change seats. He tells you that the seat he would like for you to take is a middle seat, between a sobbing eight-year-old who is flying alone and a person the flight attendant describes as "a very nervous flyer." An off-duty pilot has been assigned the seat, but he wishes to move so that he can get some rest. The flight attendant offers you a $100 voucher toward a future flight if you will change seats. What is your choice? (circle one)

Keep your current seat

Change seats and accept the $100 voucher.

Decision #9 (Version 1).

You have paid $90 for a concert ticket. You are driving to the concert, where you will meet up with a friend. On the way there, you witness a traffic accident involving a blue car and a white car. You saw that the driver of the blue car was at fault. You can tell that no one is hurt, but both cars are severely damaged. No one knows that you have witnessed the accident. You can stop and wait for the police, and tell them what you observed, but this would mean that you would miss the first half of the concert. Or, since no one was hurt, you could just forget about it and go on to the concert. Which would you choose? (circle one):

Stop and wait for the police to tell them what you witnessed

Forget about it and go on to the concert.

Decision #9 (Version 2).

You have paid $45 for a concert ticket. You are driving to the concert, where you will meet up with a friend. On the way there, you witness a traffic accident involving a blue car and a white car. You saw that the driver of the blue car was at fault. You can tell that no one is hurt, but both cars are severely damaged. No one knows that you have witnessed the accident. You can stop and wait for the police, and tell them what you observed, but this would mean that you would miss the first half of the concert. Or, since no one was hurt, you could just forget about it and go on to the concert. Which would you choose? (circle one):

Stop and wait for the police to tell them what you witnessed

Forget about it and go on to the concert.

Decision #10 (Version 1).

You are a contestant on a reality game show called "Sweet and Sour." In your challenge, you have to go in to a hotel that has given away your room, and speak to the manager. You have to choose a "sweet" or "sour" approach. In the sweet approach, you have to act in a polite and understanding manner in order to win over the manager. In the sour approach, you have to act in an angry and argumentative manner. Based on previous rounds played by other contestants, you know the following:

10% who choose "sweet" are given a VIP suite by the manager; if this happens, you win $10,000
20% who choose "sweet" are found a regular room by the manager; you win $2,000.
70% who choose "sweet" receive an apology, but no room. You win nothing.

45% who choose "sour" are found a regular room by the manager; if this happens, you win $2,000
55% who choose "sour" receive an apology, but no room. You win nothing.

Which strategy would you choose to play? (circle one)

Sweet Sour

Decision #10 (Version 2).

You are a contestant on a reality game show called "Sweet and Sour." In your challenge, you have to go in to a hotel that has given away your room, and speak to the manager. You have to choose a "sweet" or "sour" approach. In the sweet approach, you have to act in a polite and understanding manner in order to win over the manager. In the sour approach, you have to act in an angry and argumentative manner. Based on previous rounds played by other contestants, you know the following:

10% who choose "sour" are given a VIP suite by the manager; if this happens, you win $10,000
20% who choose "sour" are found a regular room by the manager; you win $2,000.
70% who choose "sour" receive an apology, but no room. You win nothing.

45% who choose "sweet" are found a regular room by the manager; if this happens, you win $2,000
55% who choose "sweet" receive an apology, but no room. You win nothing.

Which strategy would you choose to play? (circle one)

Sweet Sour